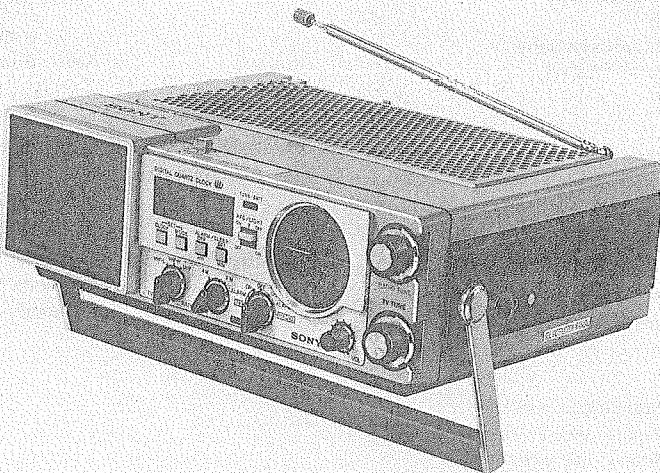


3288 TV-413 AC-121W

US Model
Canadian Model



TV-FM/AM RECEIVER

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK Δ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ !!

LES COMPOSANTS IDENTIFIÉS PAR UN TRAMÉ ET UNE MARQUE Δ SUR LES DIAGRAMMES SCHÉMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DU CIRCUIT QUI SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT SONT IDENTIFIÉS DANS CE MANUEL. SUIVRE LES PROCÉDURES QUAND LES COMPOSANTS CRITIQUES SONT REMPLACÉS OU LE FONCTIONNEMENT IMPROPRE EST SUSPECTÉ.

SPECIFICATIONS

Television System:	American and Canadian TV standards
Picture Tube:	9.4 cm, 4" (screen measured diagonally), 50° deflection
Semiconductors:	43 transistors, 38 diodes and 2 ICs
Antennas:	VHF, UHF: Built-in telescopic antenna (300 Ω balanced) 75 Ω unbalanced external antenna jack
Channel Coverage:	VHF channels: 2 – 13 UHF channels: 14 – 83
Intermediate Frequencies:	Picture i-f carrier: 45.75 MHz Sound i-f carrier: 41.25 MHz
Sound System:	4.5 MHz intercarrier Output Power: 1.5 W (at 10 % harmonic distortion) Speaker: 10 cm (4 inches) dia, 4 Ω Earphone (minijack) 1 for 8 Ω earphone or load impedance 10 k Ω or higher

— Continued on page 2 —

3288
SONY
SERVICE MANUAL

3288

Automatic Controls: AFC (automatic frequency control)
AGC (automatic gain control)

Anode Voltage: 6.7 kV at 20 μ A beam current

Power Requirements: 120 V ac, 60 Hz, with AC-121W ac power adaptor
9 V dc, six batteries size D (IEC Designation LR20)
12 V car battery with optional Sony car battery cord DCC-16W or DCC-16AW

Power Consumption: 13 W ac
8 W dc (in 12 V operation)

Dimensions: Approx. 273 (w) x 92 (h) x 215 (d) mm
10 $\frac{3}{8}$ (w) x 3 $\frac{5}{8}$ (h) x 8 $\frac{1}{2}$ (d) inches including projecting parts and controls, excluding handle or hood

Net Weight: Approx. 2.2 kg (4 lb 14 oz) without batteries

Battery Life

Battery life is dependent on operating conditions and the type of batteries used. The following table shows some examples; the upper row shows the battery life with an intermittent use of two-hours on and two-hours off, and the lower shows that with continuous use.

TV viewing

Eveready No. 1050	Eveready heavy duty No. 1250	Eveready alkaline No. E95
11 hours	16 hours	33 hours
8 hours	16 hours	24 hours

RADIO SECTION

Frequency Range: FM: 87.5 – 108 MHz
AM: 530 – 1,605 kHz

Antennas: FM: Built-in telescopic antenna (300 Ω balanced)
75 Ω unbalanced external antenna jack

AM: Built-in ferrite-rod antenna

TIMER SECTION

Time Display System: 12-hour display with AM/PM indicators

Power Requirements: 1.5 V dc
Battery size "AA" x 1 (IEC Designation R6)

Accessories Supplied: AC power adaptor AC-121W
Earphone ME-20H
TV hood

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the condition of the monopole antenna (if any).
Make sure the end is not broken off, and has the plastic cap on it. Point out the danger of impalement on a broken antenna to the customer, and recommend the antenna's replacement.
8. Check the B+ and HV to see they are at the values specified. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
9. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

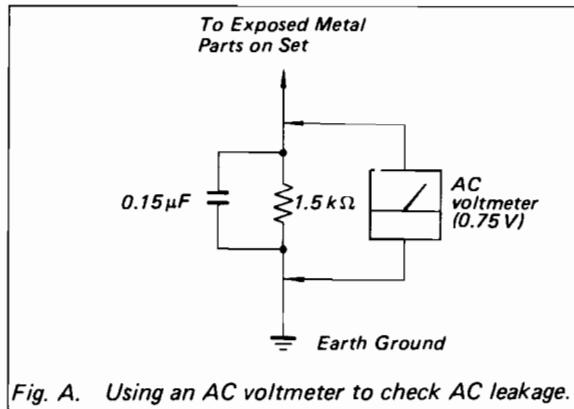


Fig. A. Using an AC voltmeter to check AC leakage.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60-100 watts trouble light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side of the line, the lamp should light at normal brilliance if the screw is at ground potential. (See Fig. B)

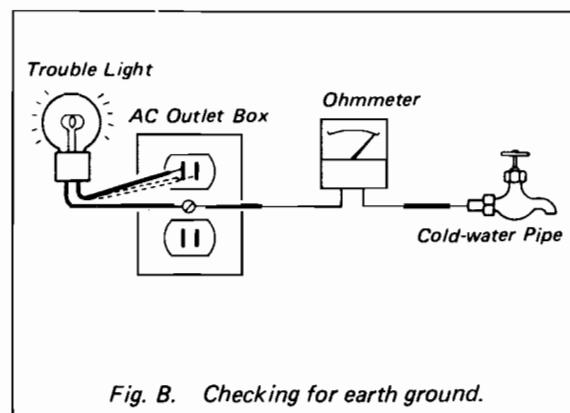
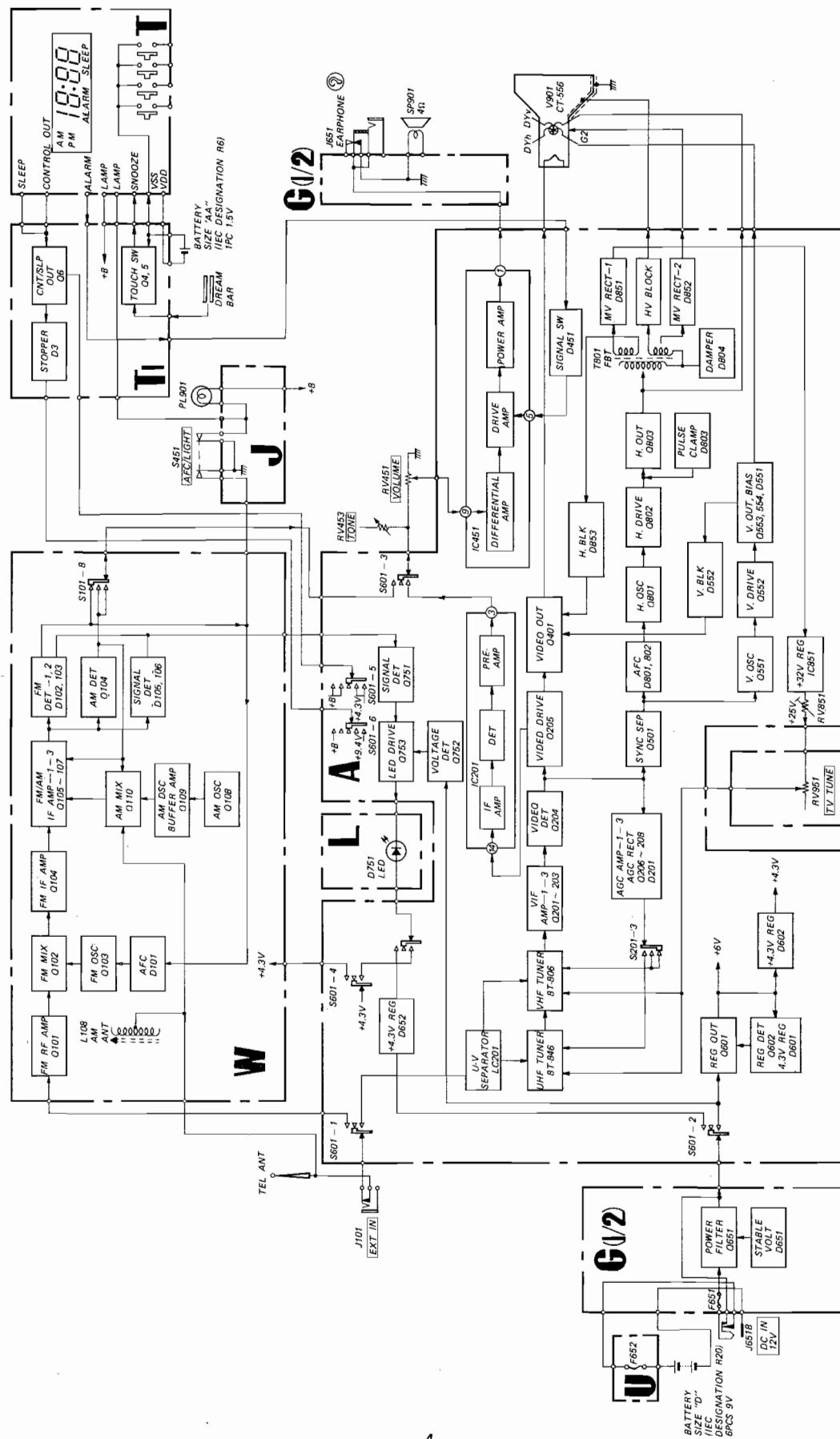


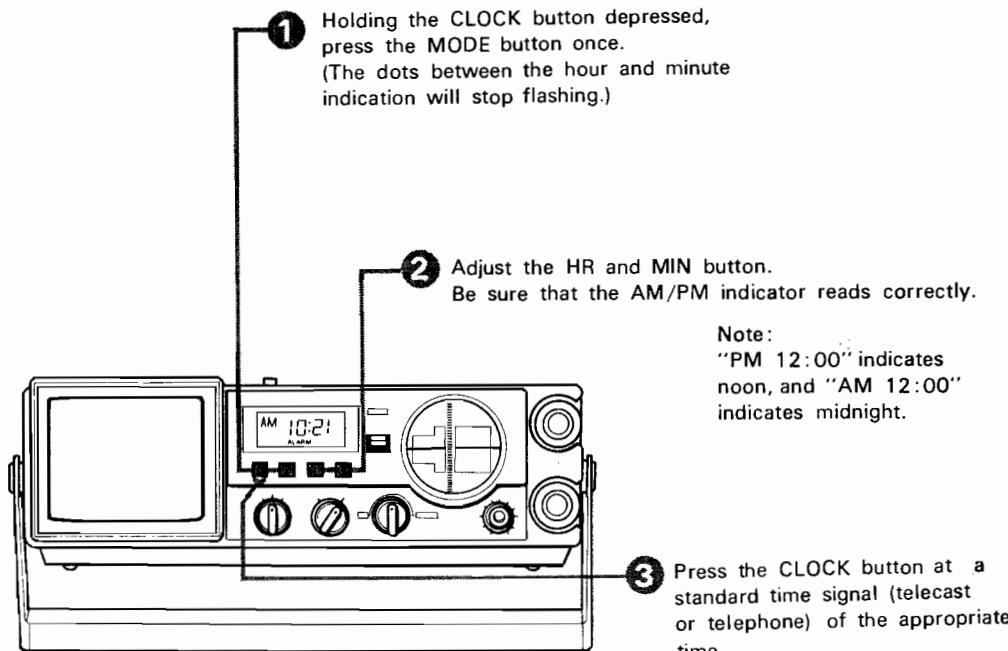
Fig. B. Checking for earth ground.

SECTION 1 OUTLINE

1-1. BLOCK DIAGRAM



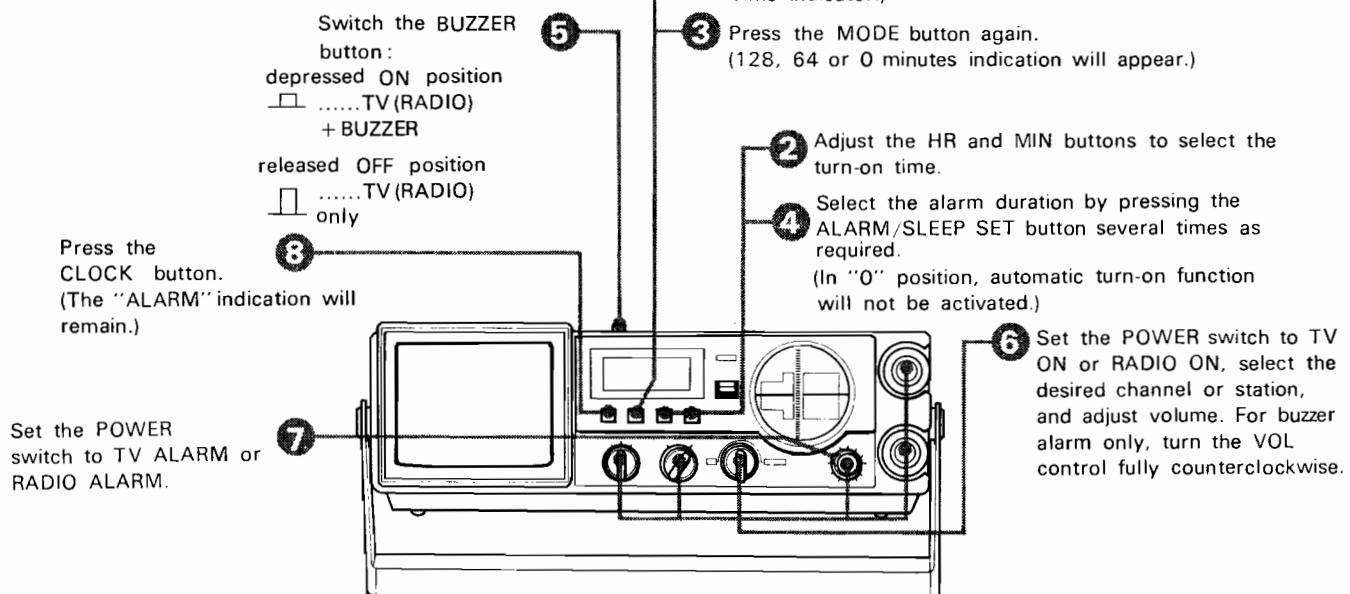
1-2. CLOCK ADJUSTMENT



(The dots between the hour and minute indication begin to flash and the time indicator window will then show the regular clock time.)

1-3. ALARM SET AND ALARM DURATION

(Before setting the alarm, check that the clock is correct.)



- For repeat alarm, touch the DREAM BAR.
- To reset the alarm setting, press the CLOCK button and repeat through steps ① ② ③ ④ above.
- To cancel the alarm function before the turn-on time, select

- the 0 position in step ④ above.
- To turn off manually during the alarm duration, press the ALARM/SLEEP OFF button.

- At the preset time, the TV and/or buzzer or radio and/or buzzer will come on automatically, and it will shut itself off automatically after about 128 or 64 minutes, selected in step ④ above.
- If you leave the POWER switch in TV ALARM or RADIO ALARM position, there is no need to reset the alarm every day because of this set's 24-hour system.
- Make sure that there is no earphone connected to the \odot jack. Otherwise, the alarm sound cannot be heard from the speaker.

Snooze Alarm for Slow Risers (using the DREAM BAR)

If you awake to the TV and/or buzzer or radio and/or buzzer in the morning but want to doze for a few more minutes, just lightly touch the DREAM BAR; TV and/or buzzer or radio and/or buzzer will be silenced, but will automatically sound off again after about 7 minutes. If you then want to doze more, touch the bar again. You will be awakened again and again until you decide to get up. This sequence will continue during the preselected alarm duration of 128 or 64 minutes.

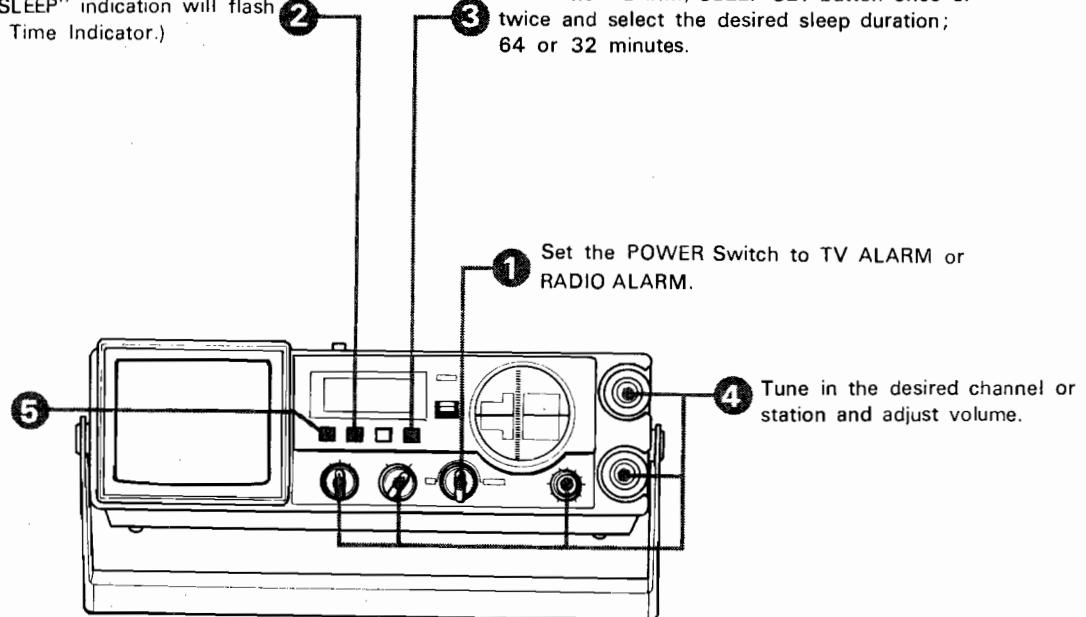
- If the DREAM BAR is not touched for more than 4 minutes after the alarm sound has come on, the alarm function will be canceled.

1-4. SLEEP SET

(Before operation, check that the clock is correct.)

Press the MODE button three times.
(The "SLEEP" indication will flash **2** in the Time Indicator.)

Press the ALARM/SLEEP SET button once or twice and select the desired sleep duration; 64 or 32 minutes.



After the adjustment
press to display the regular
clock time.

- To reset the sleep setting, press the CLOCK button and repeat through steps ②③ above.
- To turn off manually during the sleep duration, press the ALARM/SLEEP OFF button.

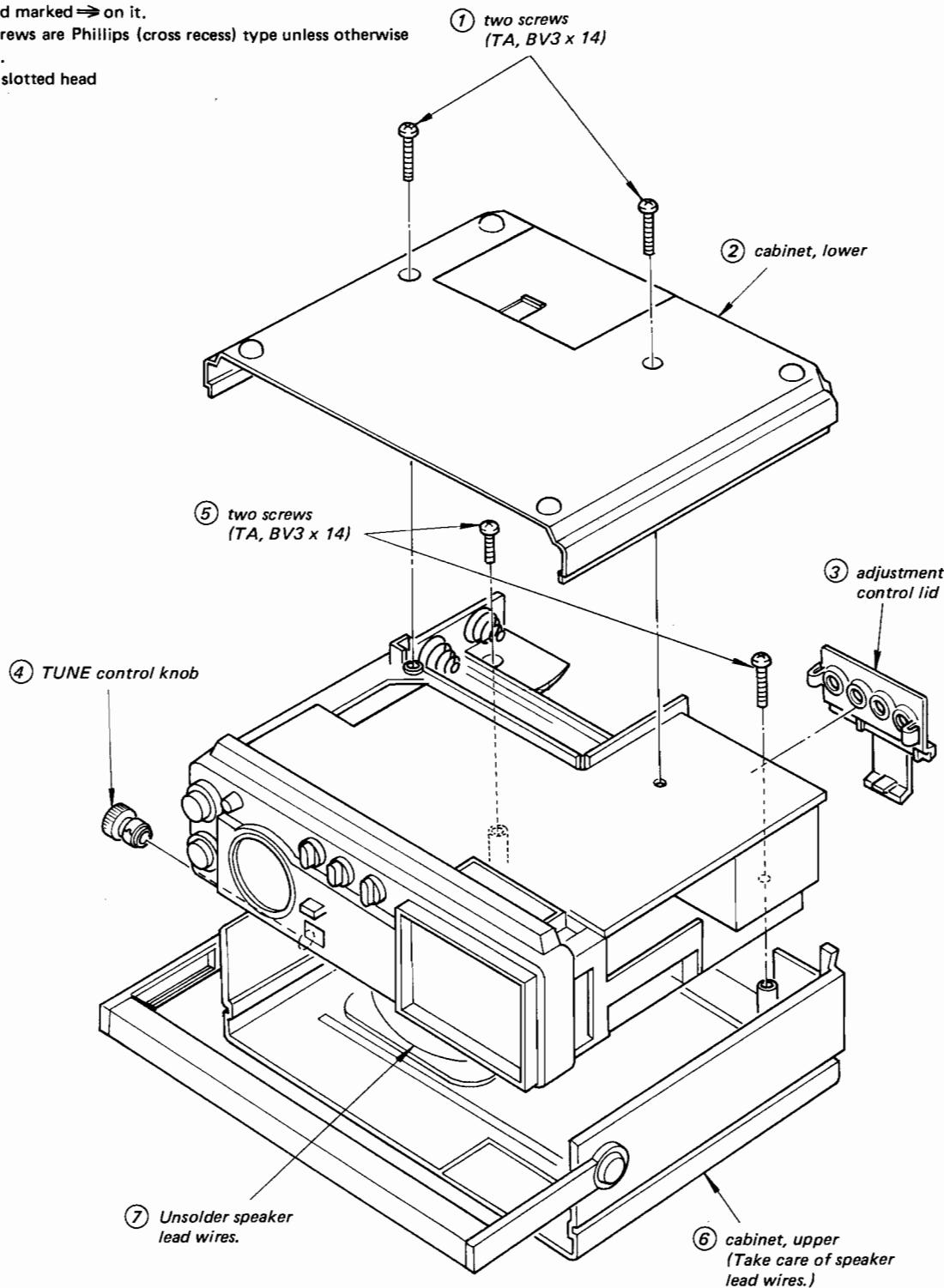
SECTION 2

DISASSEMBLY

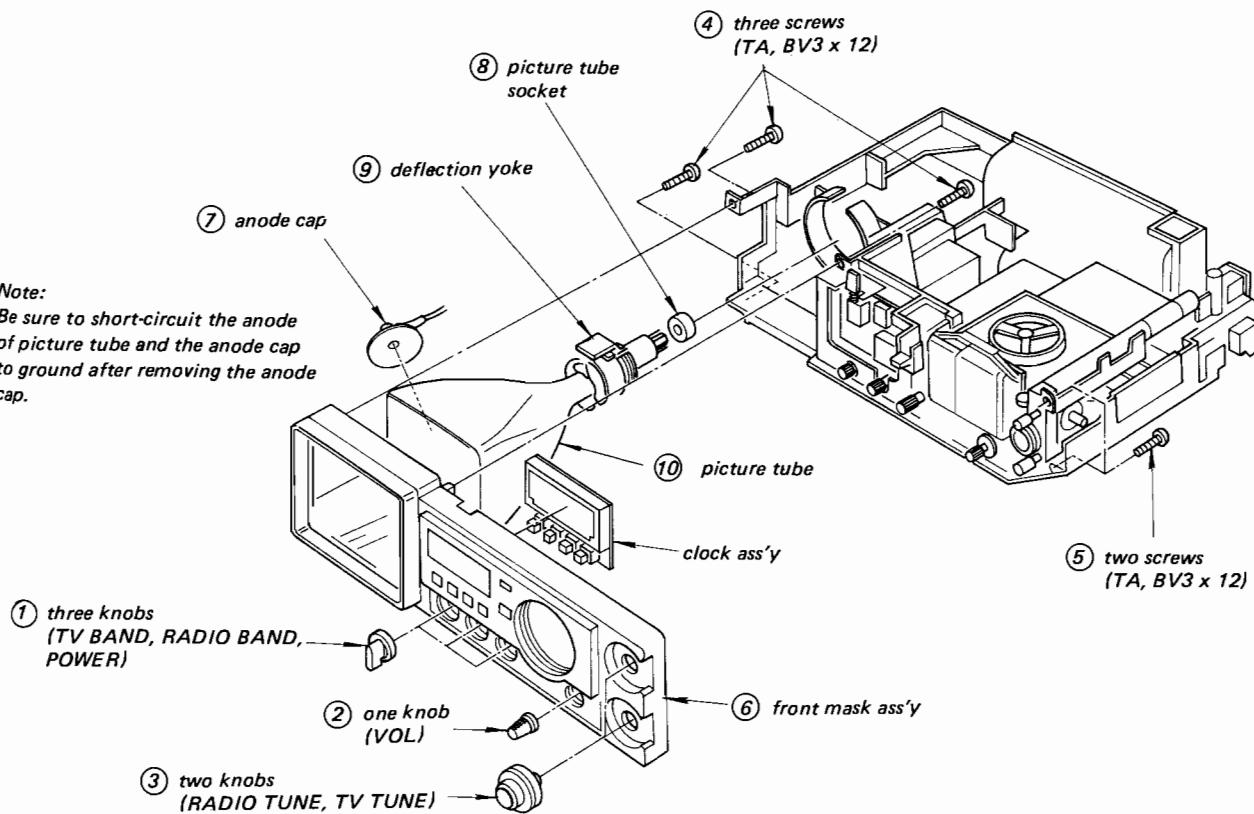
2-1. CABINET REMOVAL

Note:

- Follow the disassembly procedure in the numerical order given.
- When removing the rear cover, take out all the screws around marked \Rightarrow on it.
- All screws are Phillips (cross recess) type unless otherwise noted.
- (-) = slotted head

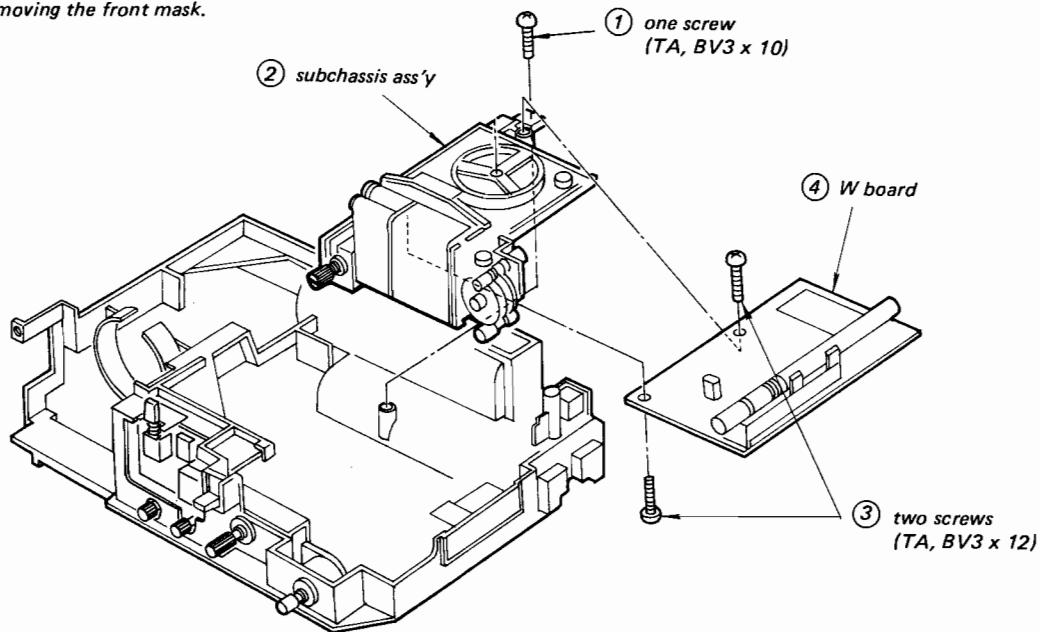


2-2. PICTURE TUBE REMOVAL

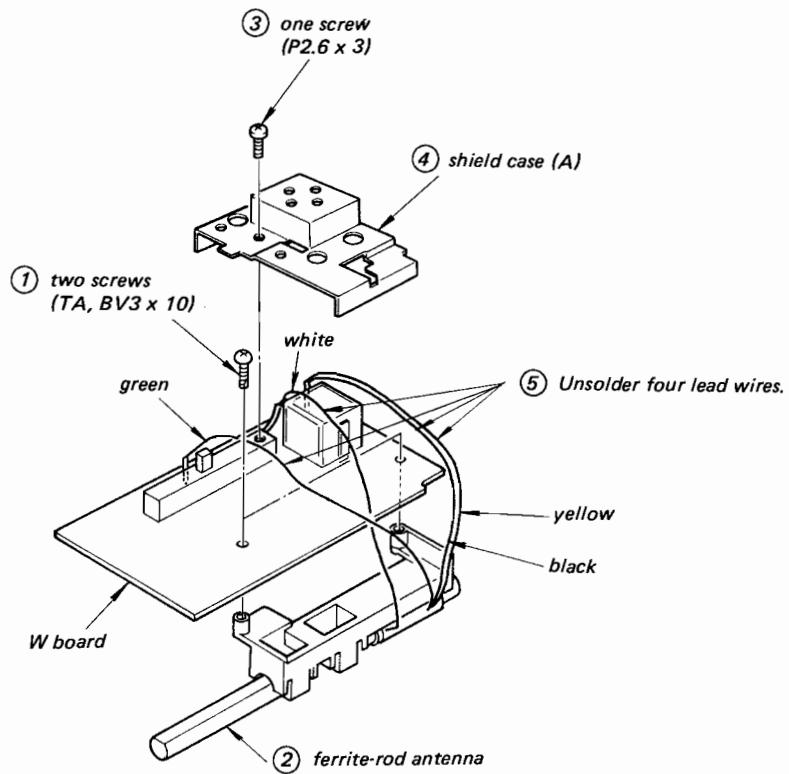


2-3. W BOARD REMOVAL

Note: Perform this removal after removing the front mask.

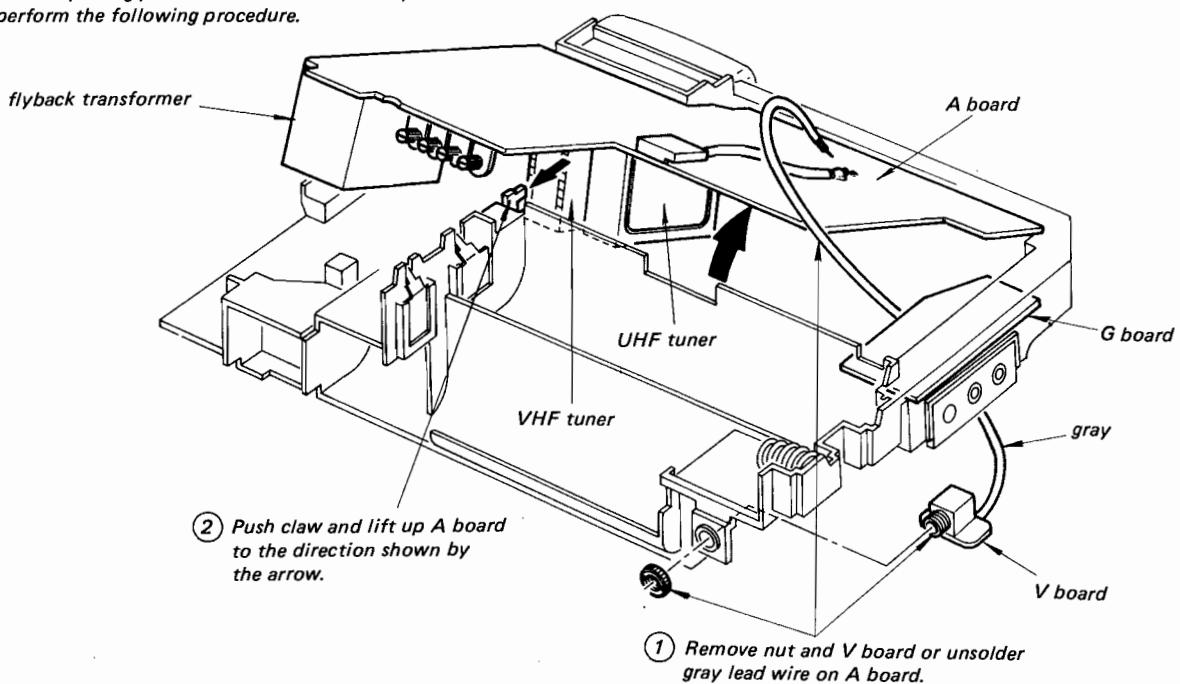


2-4. FERRITE-ROD ANTENNA REMOVAL



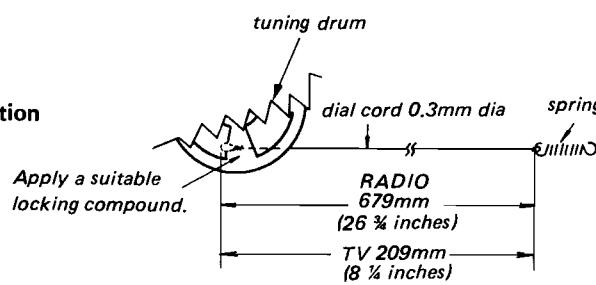
2-5. PARTS REPLACEMENT ON A AND G BOARDS

When replacing parts on A board or G board, perform the following procedure.

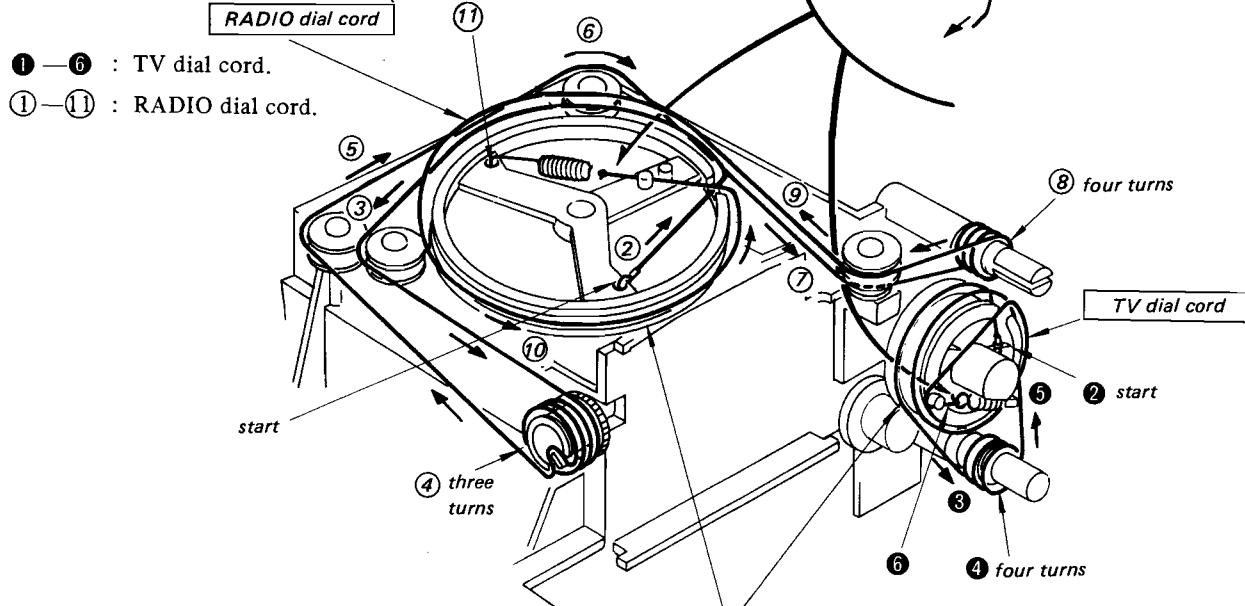


2-6. DIAL CORD STRINGING

(1) Preparation

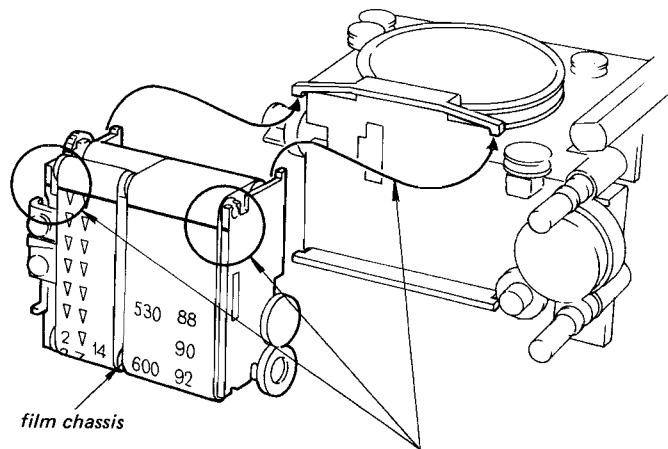


(2) Stringing



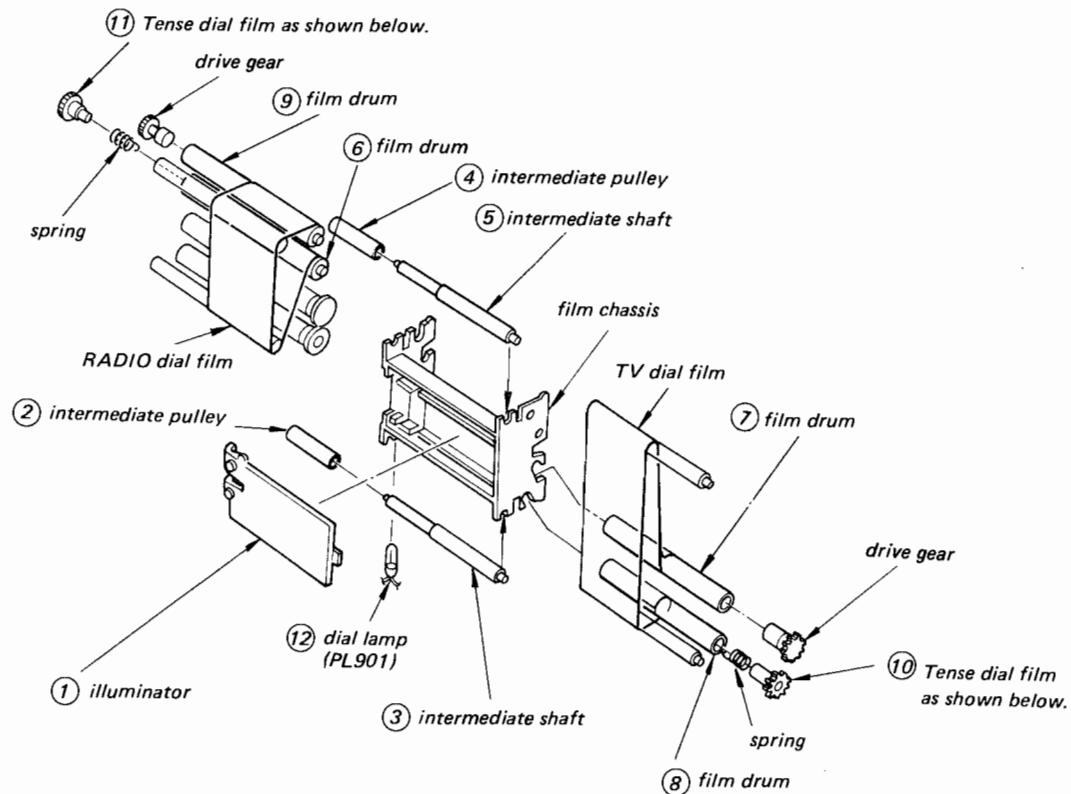
⑦ ⑧ Turn the tuning drum fully
counterclockwise.

(3) Calibration

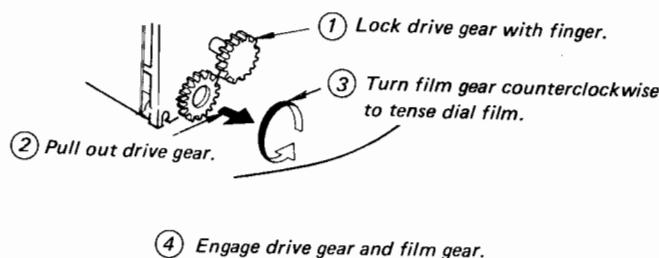


Set TV and RADIO films as shown
in figure and install film chassis.

2-7. FILM CHASSIS ASSEMBLY



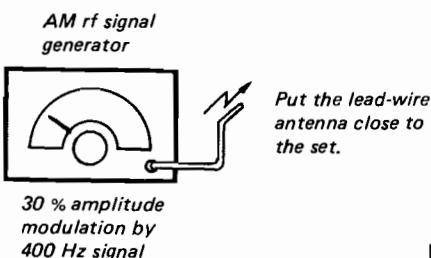
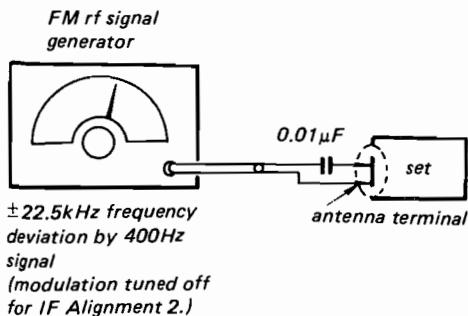
Dial Film Tensioning



SECTION 3 ADJUSTMENTS

3-1. W BOARD ADJUSTMENTS

Setting: POWER Switch: RADIO
RADIO BAND Switch: FM or AM



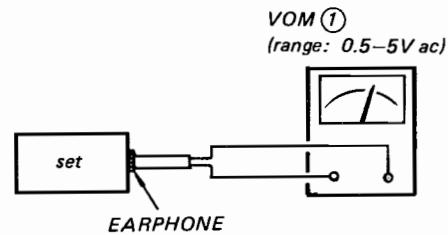
AM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VOM ①.	
1,680kHz	CT105
520kHz	T107

AM IF ALIGNMENT (455kHz)	
Adjust for a maximum reading on VOM ①.	
T104	
T108	

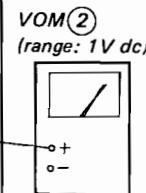
AM TRACKING ADJUSTMENT	
Adjust for a maximum reading on VOM ①.	
620kHz	L108
1,400kHz	CT103

Note:

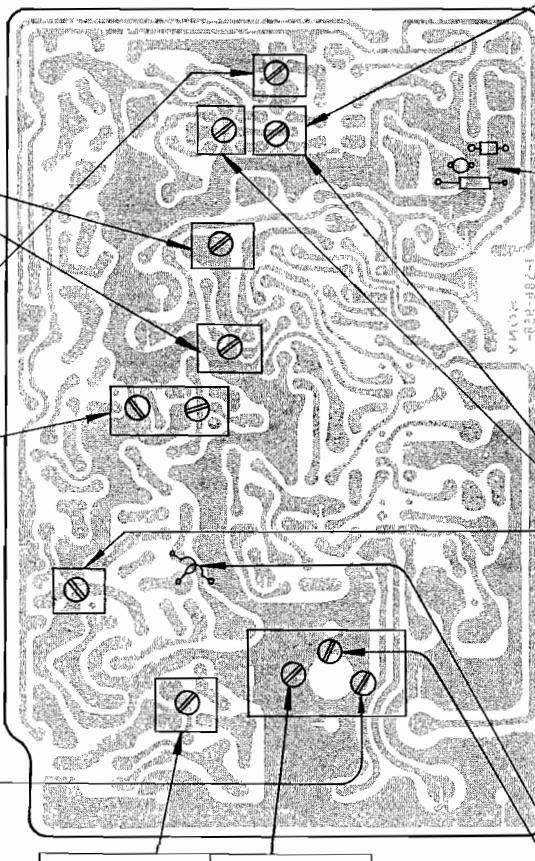
- These adjustment should be performed with rated power supply voltage.
- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.



FM IF ALIGNMENT 2 (10.7MHz with no modulation)	
Adjust for 0V reading on VOM ②.	
T103	



FM IF ALIGNMENT 1 (10.7MHz with modulation)	
Adjust for a maximum reading on VOM ①.	
T103	
T102	
T101	



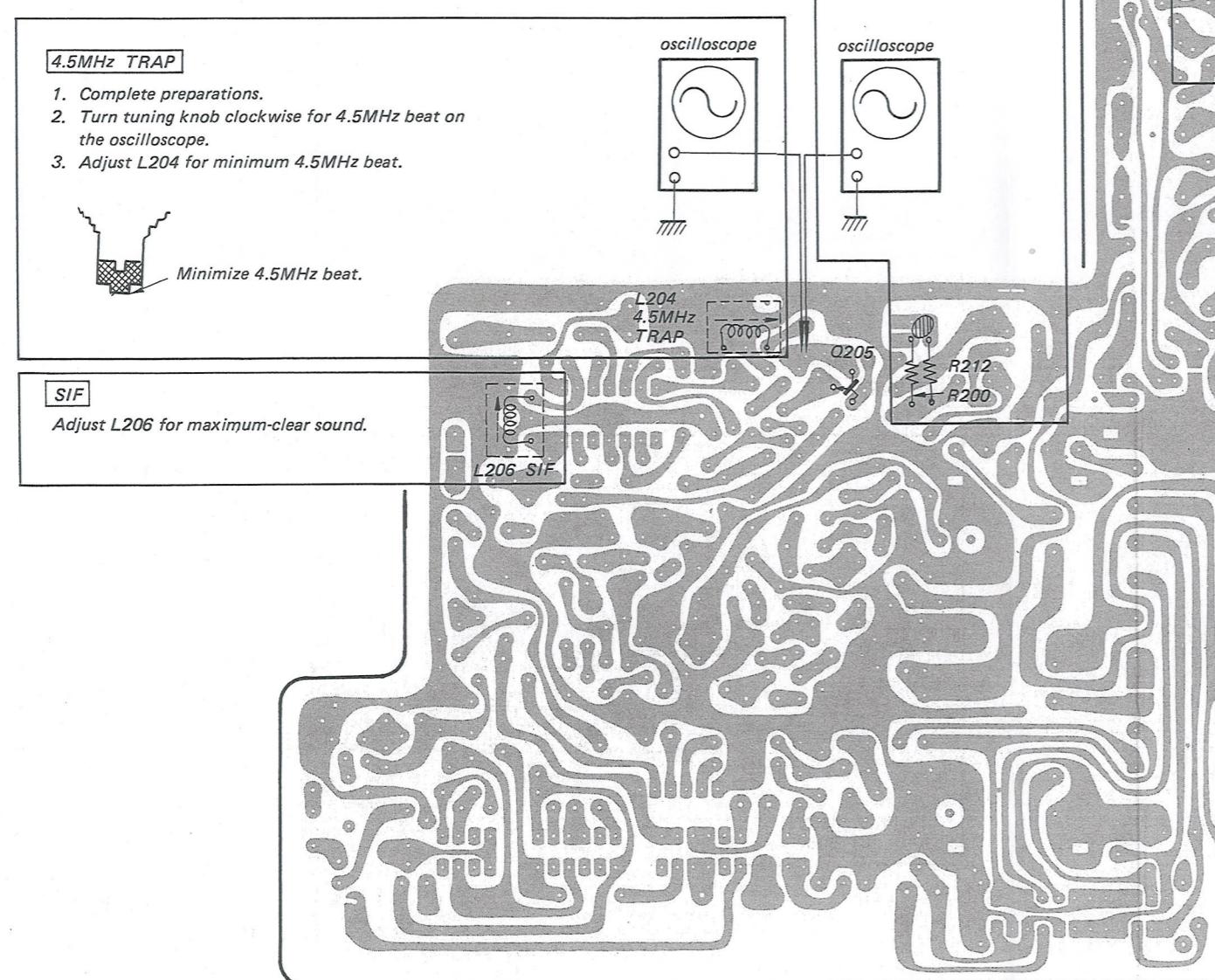
L101	CT101
87.5MHz	108MHz
Adjust for a maximum reading on VOM ①.	
FM TRACKING ADJUSTMENT	

FM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VOM ①.	
L103	87.5MHz
CT102	108 MHz

3-2. A BOARD ADJUSTMENTS

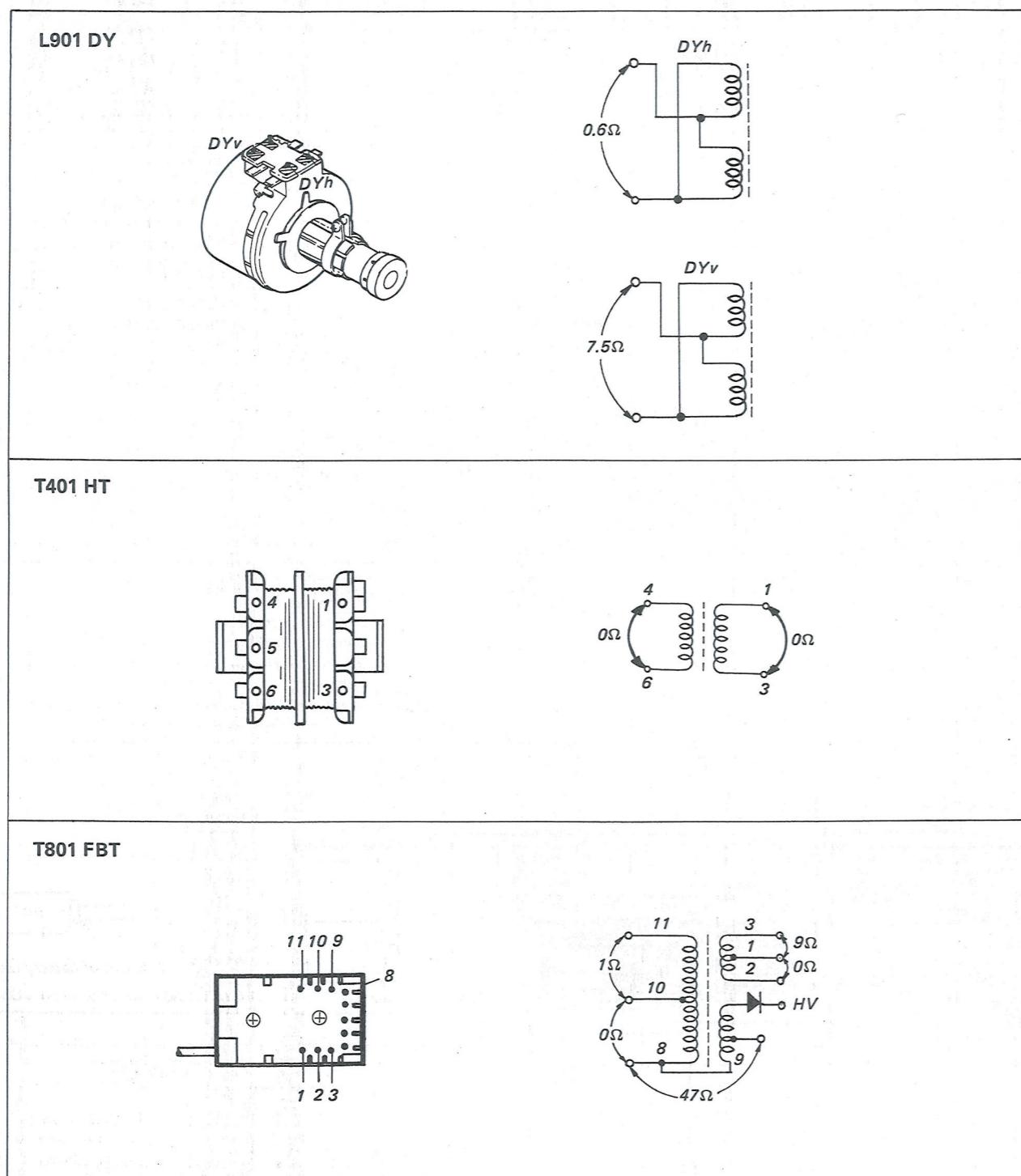
Note:

- Setting: POWER Switch-TV
- Test Equipment Required
 1. VOM
 2. Regulated DC Power Supply
 3. Oscilloscope
- Preparations
 1. Tune in an off-air signal.
 2. Set V. HOLD and H. HOLD controls for correct sync.
 3. Set CONTR and BRIGHT controls for best picture.
- These adjustment should be performed with rated power supply voltage.



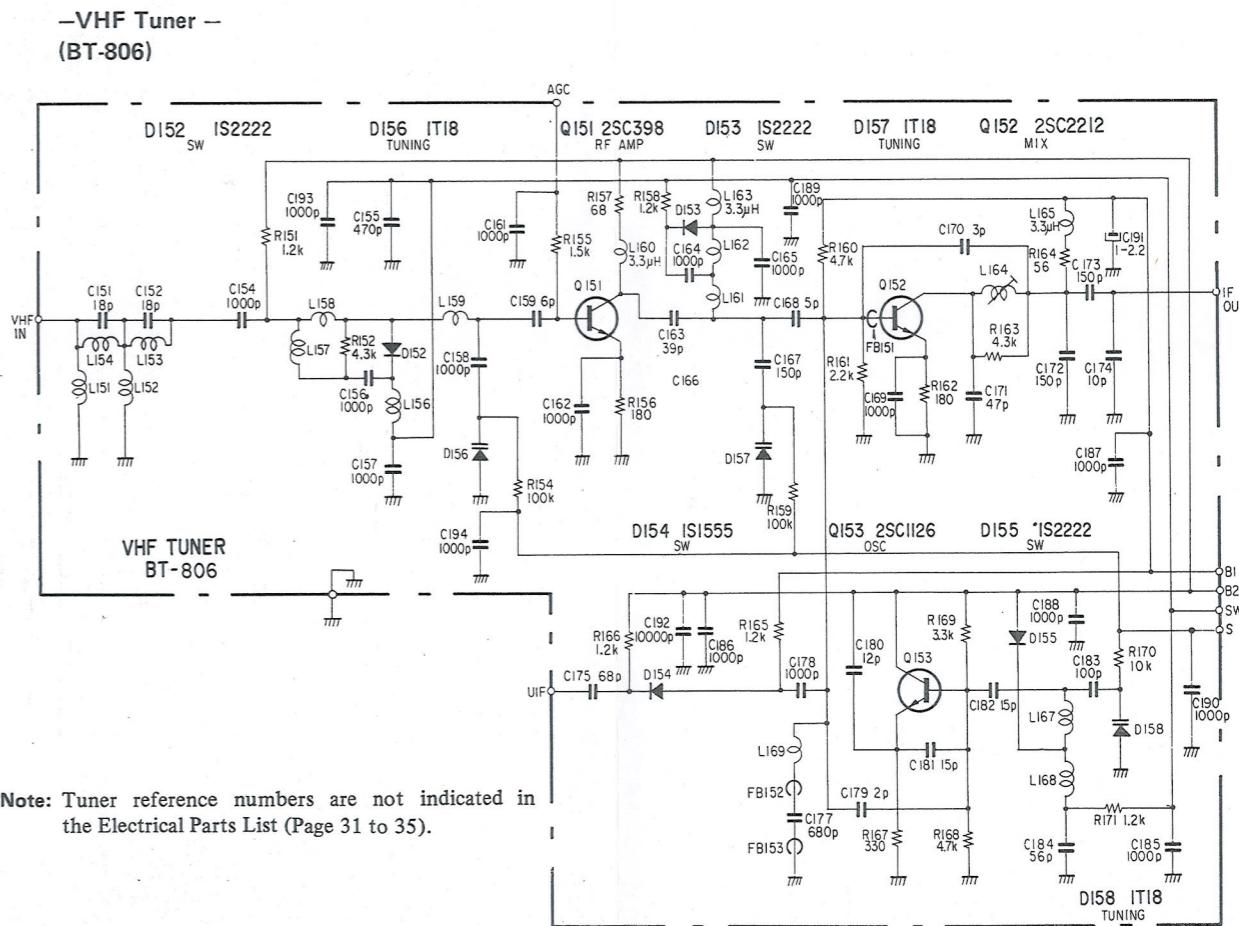
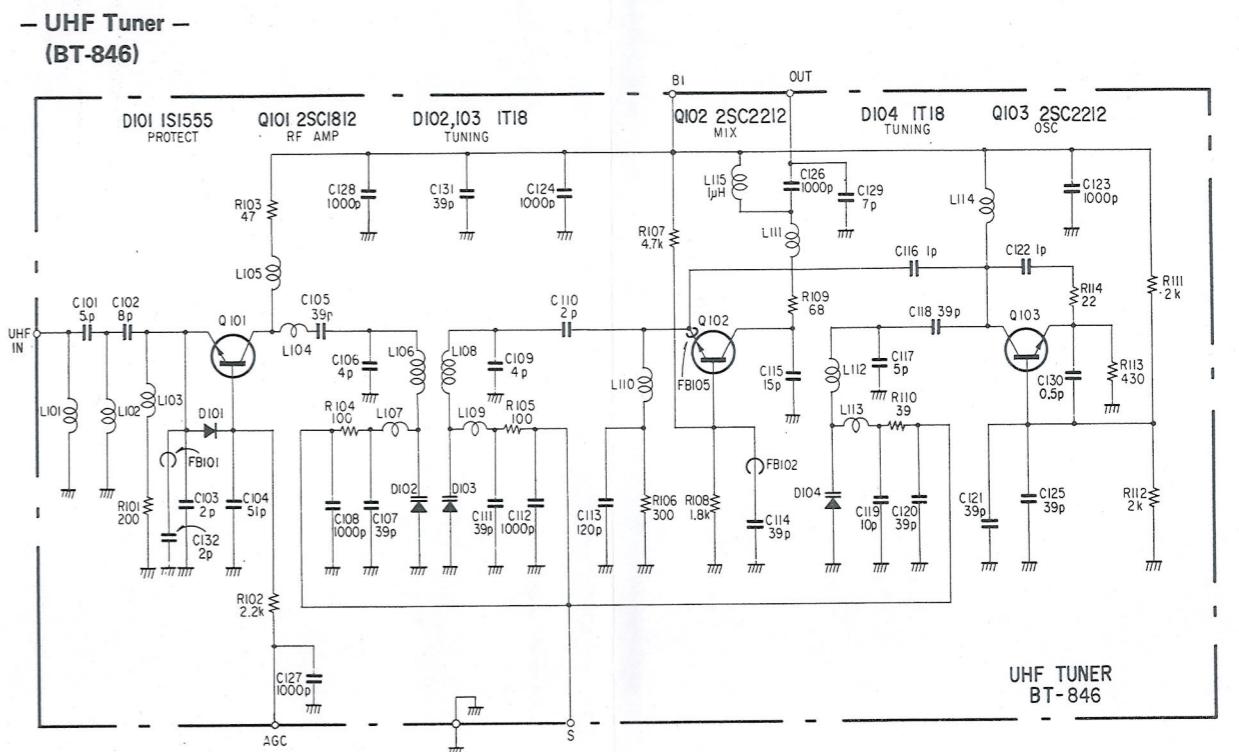
SECTION 4
DIAGRAMS

4-1. DC RESISTANCE AND WINDING DIAGRAMS OF COILS AND TRANSFORMERS



Note:
DC resistance measurements shown with coils and
transformers disconnected from circuit.

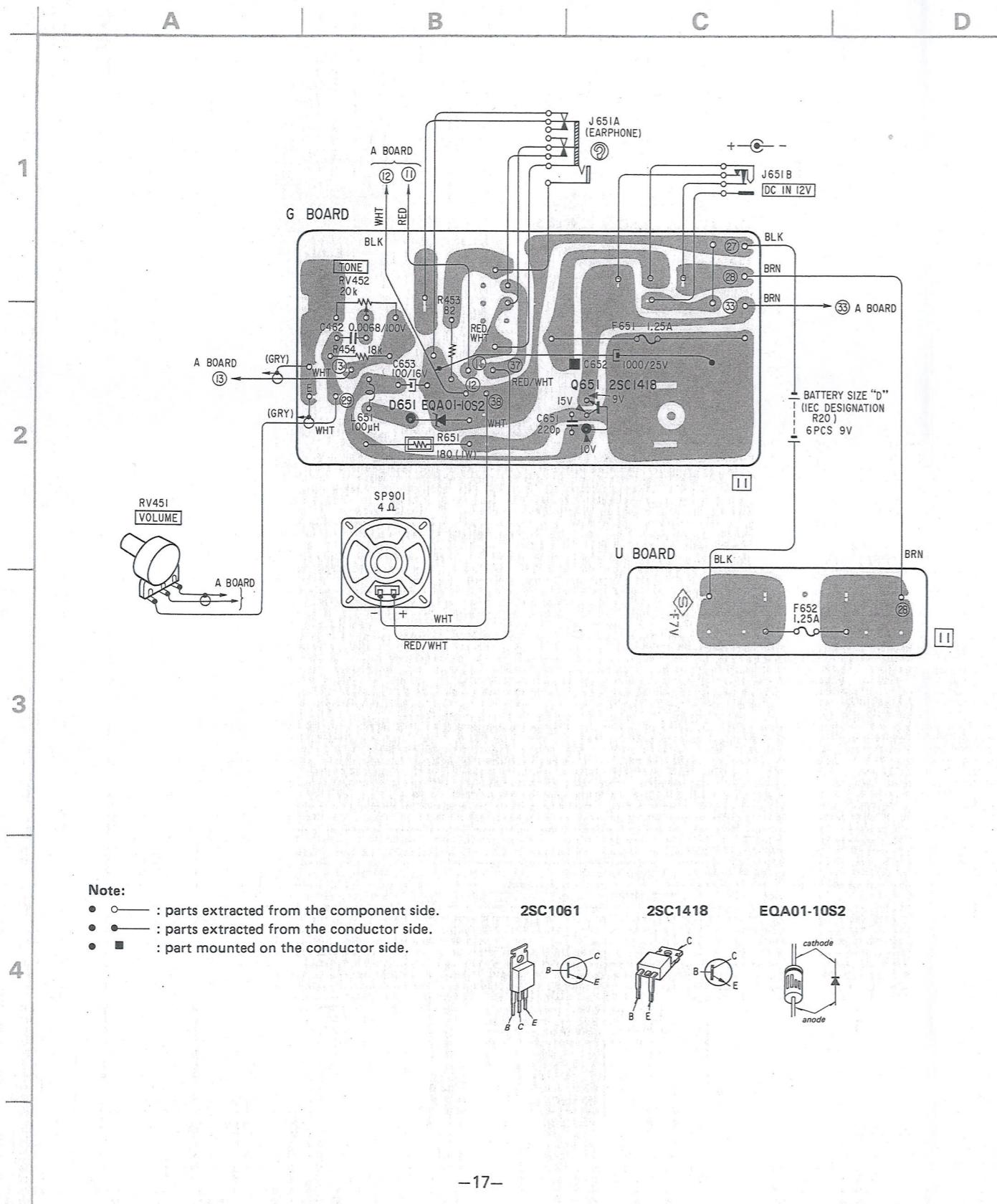
4-2. TUNER SCHEMATIC DIAGRAM



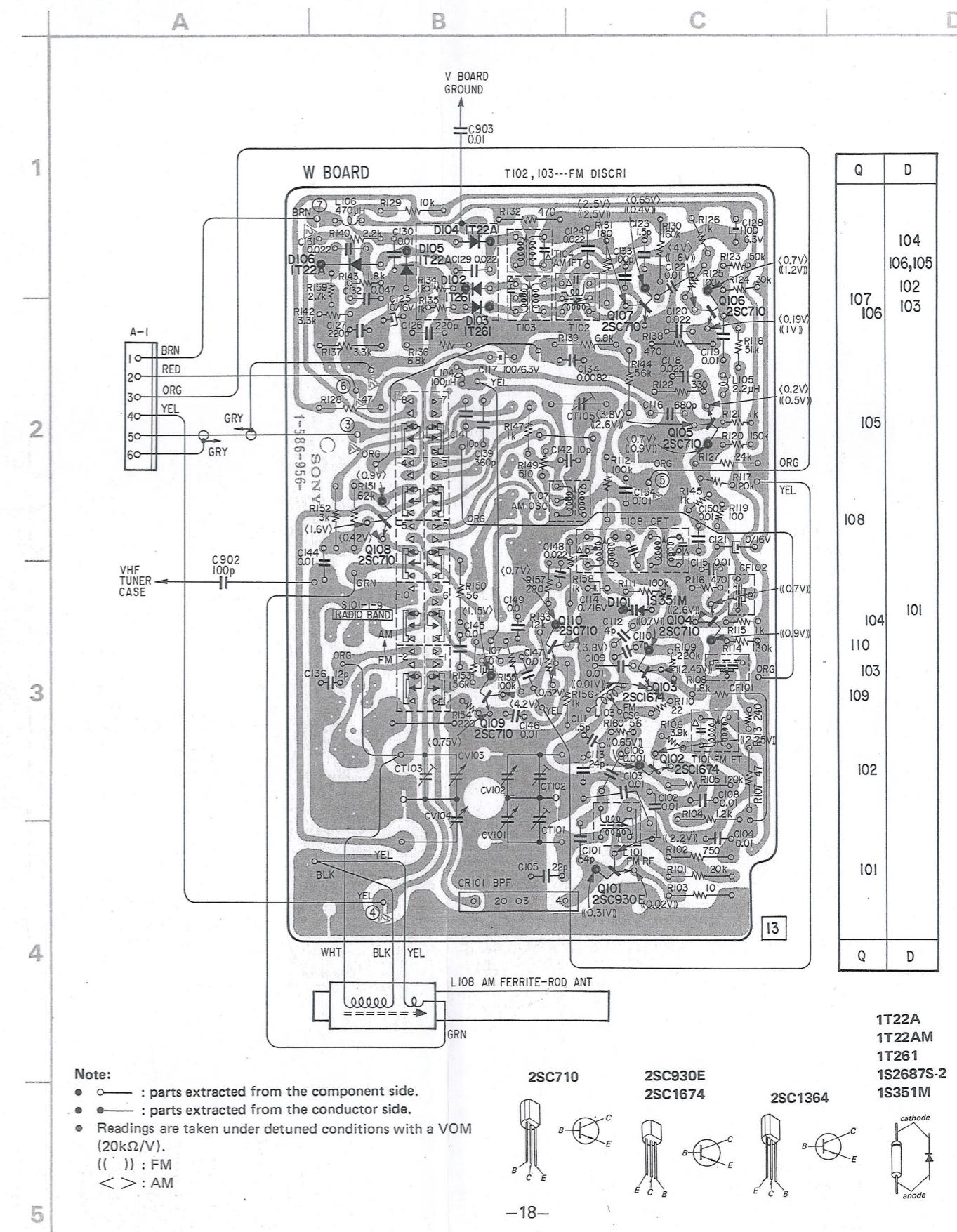
Note: Tuner reference numbers are not indicated in
the Electrical Parts List (Page 31 to 35).

U [POWER
AUDIO] GW [RADIO SECTION
FM/AM]4.3. MOUNTING DIAGRAMS
— Conductor Side —

— G and U Boards —



— W Board —



- A, J, L, T1 and V Boards -

A T1 J L

TV-413 TV-413

A

TV SECTION
[VIF, SIF, AF, VIDEO,
H-V DEF, REG]

T1

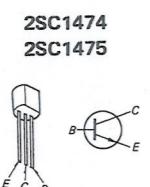
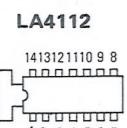
[CLOCK CONT.]

J

L

V

H

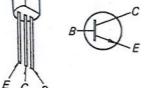


Q, IC	753 752 751	IC201 208 207	206 201 202 203	205 204	401 553 552 551	601 554 602 501	551	Q, IC
D	751 653	652	201		853	552	551, 601	D
ADJ			L204	R200	602	552	551, 601	ADJ

1

LA4112

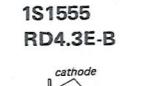
2SC1474
2SC1475



2

SN76681N

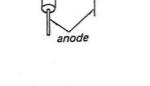
1S1555
RD4.3E-B



2

2SA733
2SA772

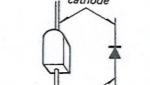
HF1A
HF1B
HF1C
HF1Z



3

2SA1027R

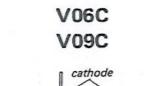
SEL101R



4

2SC403C

V06C
V09C



5

2SC710

VD1222



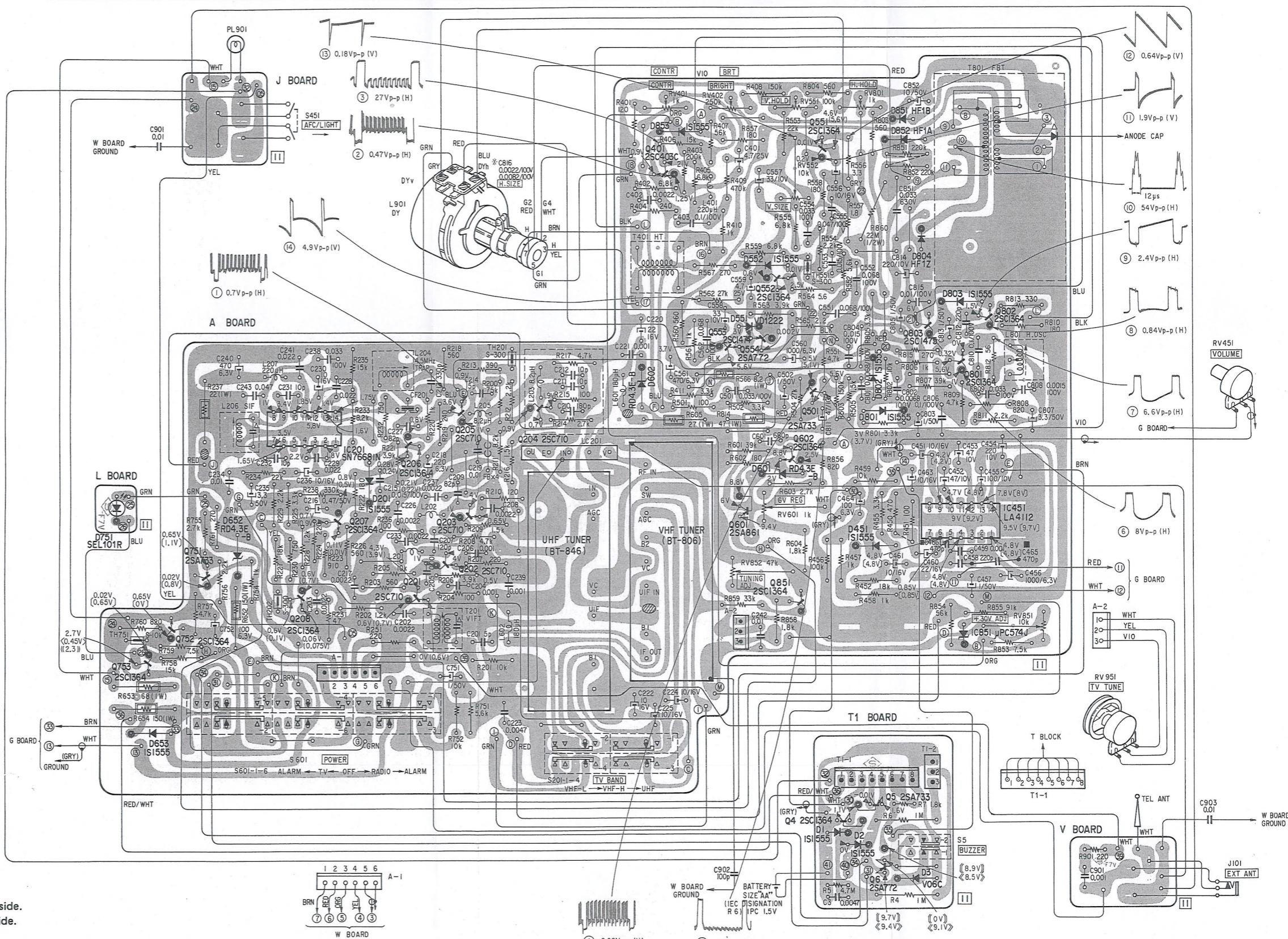
2

2SC1364

μ PD574J



Note:
• : parts extracted from the component side.
• : parts extracted from the conductor side.
• : part mounted on the conductor side.



Note: The components identified by shading and mark are critical for safety. Replace only with part number specified.

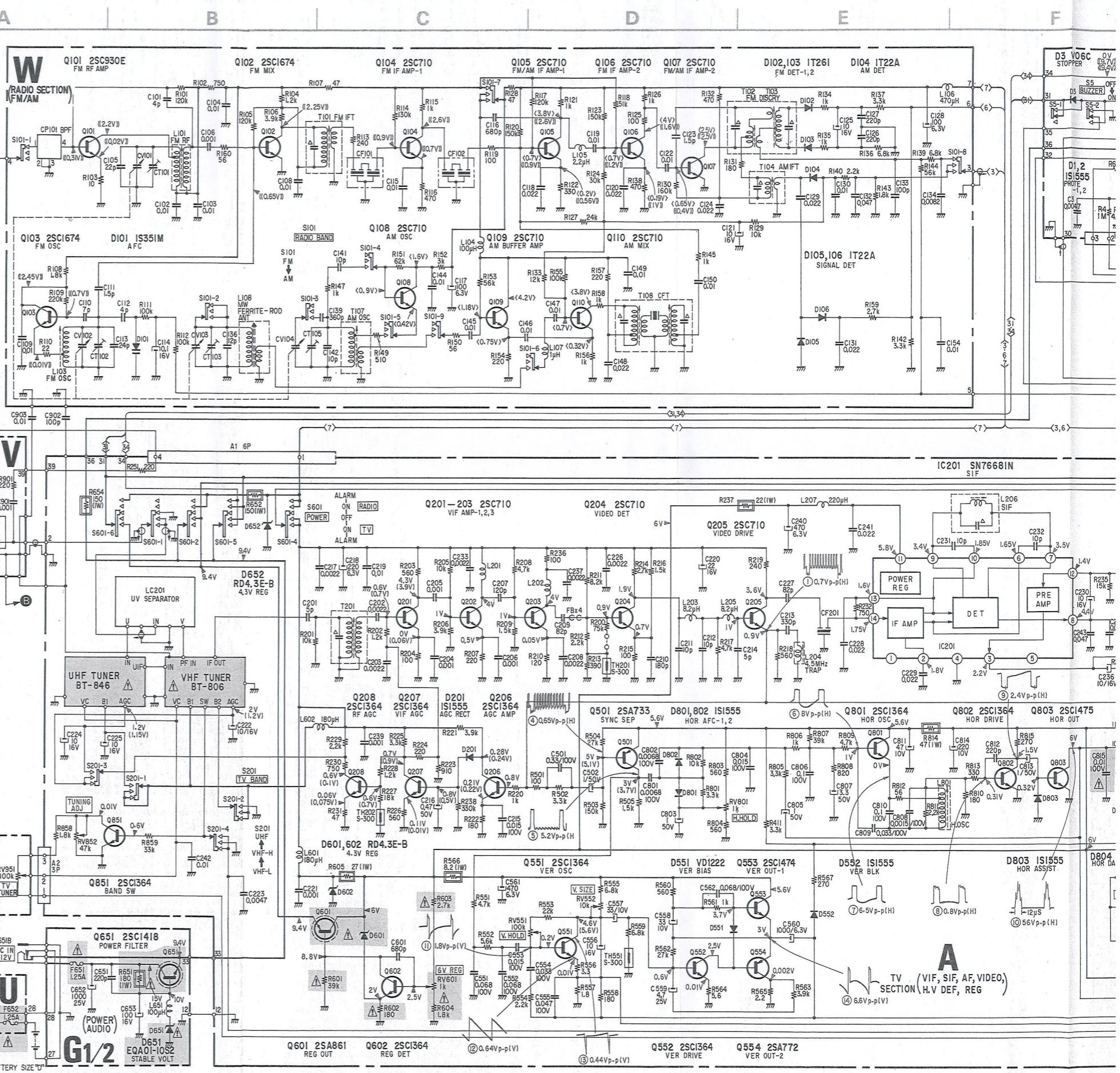
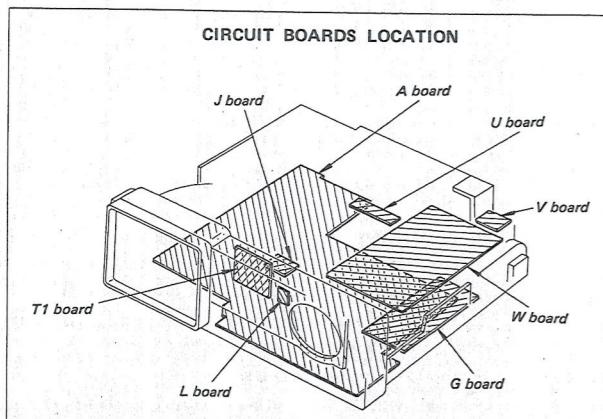
Note: Les composants identifiés par un trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

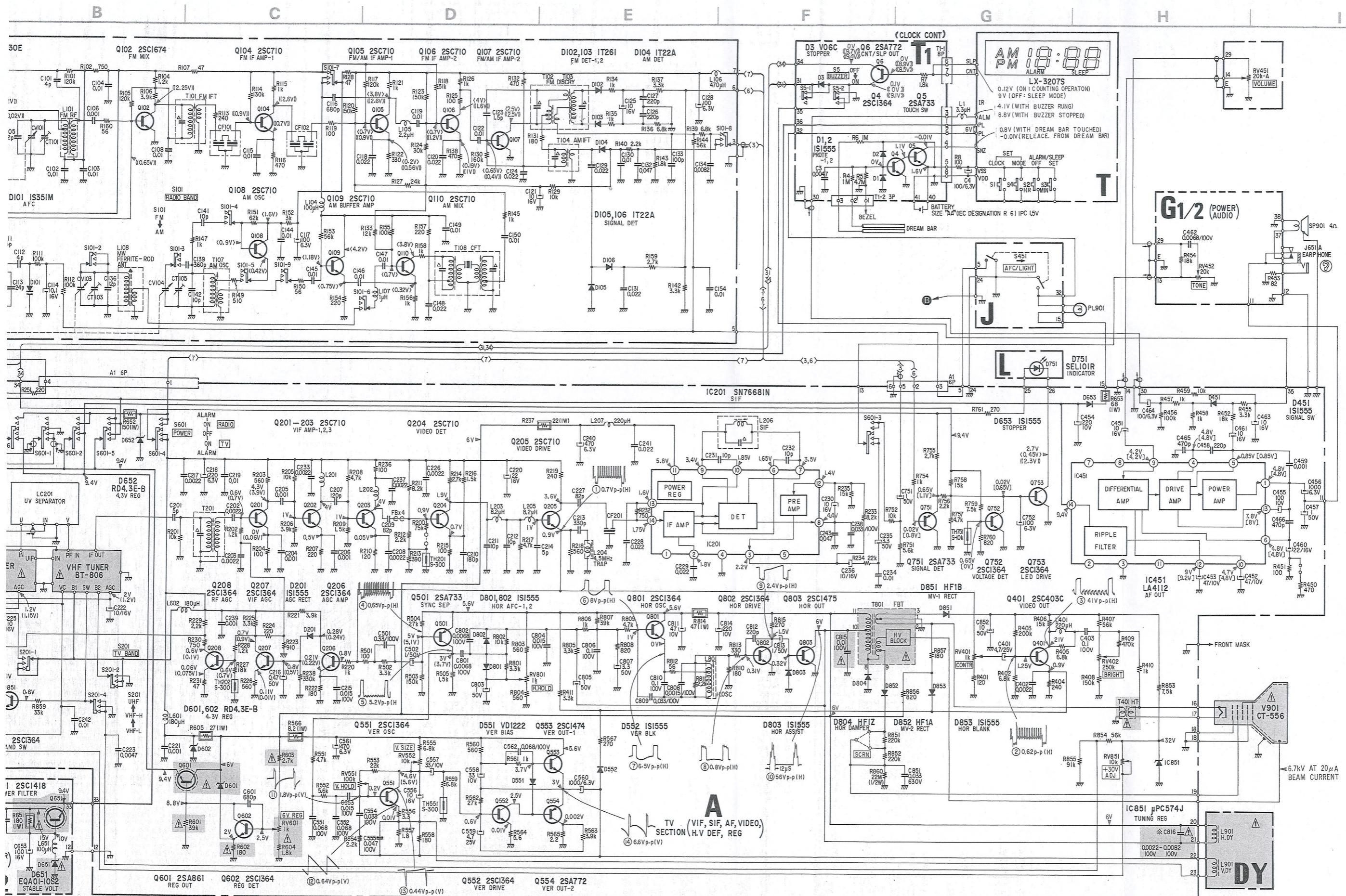
Note:

- All capacitors are in μF and ceramic unless otherwise noted. 50WV or less are not indicated except for electrolytics pf : $\mu\mu\text{F}$, elect : electrolytic
- All resistors are in ohms, $\frac{1}{2}\text{W}$ unless otherwise noted.
k : 1000Ω , M : $1000\text{k}\Omega$
-  : nonflammable resistor.
-  : internal component.
-  : panel designation.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Switch

Ref. No.	Switch	Position
S101-1-9	RADIO BAND	FM
S201-1-4	TV BAND	VHF-L
S451	AFC/LIGHT	ON/OFF
S601-1-6	POWER	OFF

- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a 20,000-ohm-per-volt VOM.
- Voltages variations may be noted due to normal production tolerances.
- \ast : selected to yield optimum performance.
- $\boxed{}$: adjustment for repair.
- $\underline{}$: B+ bus.
- All voltages are measured with dc-power operated.
- Voltages in A board are taken under tuned conditions with CONTR and BRIGHT controls set for best picture.
 - () : detuned
 - [] : FM or AM
 - (()) : FM
- Voltages in W board are taken under detuned conditions.
 - (()) : FM
 - < > : AM
- Voltages in T1 board
 - [] : TV BAND
 - RADIO BAND } OFF, with SLEEP MODE
 - <> : TV BAND
 - RADIO BAND } ON





SECTION 5
EXPLODED VIEWS

1/4 WATT CARBON RESISTORS

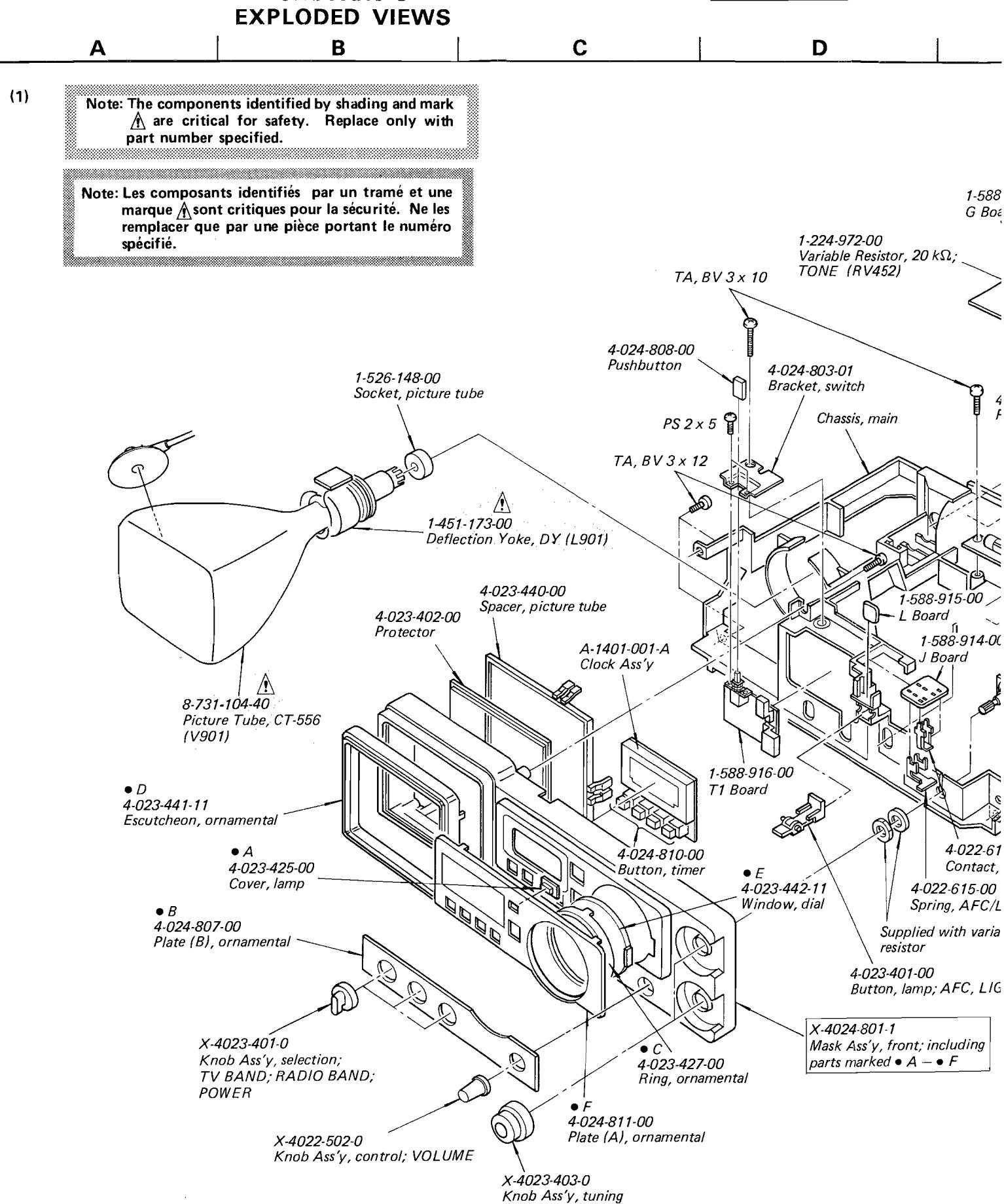
Ω	Part No.										
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-576-00	13k	1-246-500-00	130k	1-246-524-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-577-00	15k	1-246-501-00	150k	1-246-525-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-578-00	16k	1-246-502-00	160k	1-246-526-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-579-00	18k	1-246-503-00	180k	1-246-527-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-580-00	20k	1-246-504-00	200k	1-246-528-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-581-00	22k	1-246-505-00	220k	1-246-529-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-582-00	24k	1-246-506-00	240k	1-246-530-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-583-00	27k	1-246-507-00	270k	1-246-531-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-584-00	30k	1-246-508-00	300k	1-246-532-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-585-00	33k	1-246-509-00	330k	1-246-533-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-586-00	36k	1-246-510-00	360k	1-246-534-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-587-00	39k	1-246-511-00	390k	1-246-535-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00

HARDWARE NOMENCLATURE

Screw:
— P 3 x 10
L: Length in mm
D: Diameter in mm
Type of head
Indicated slotted-head only.
Unless otherwise indicated, it means cross-recessed head (Phillips type).

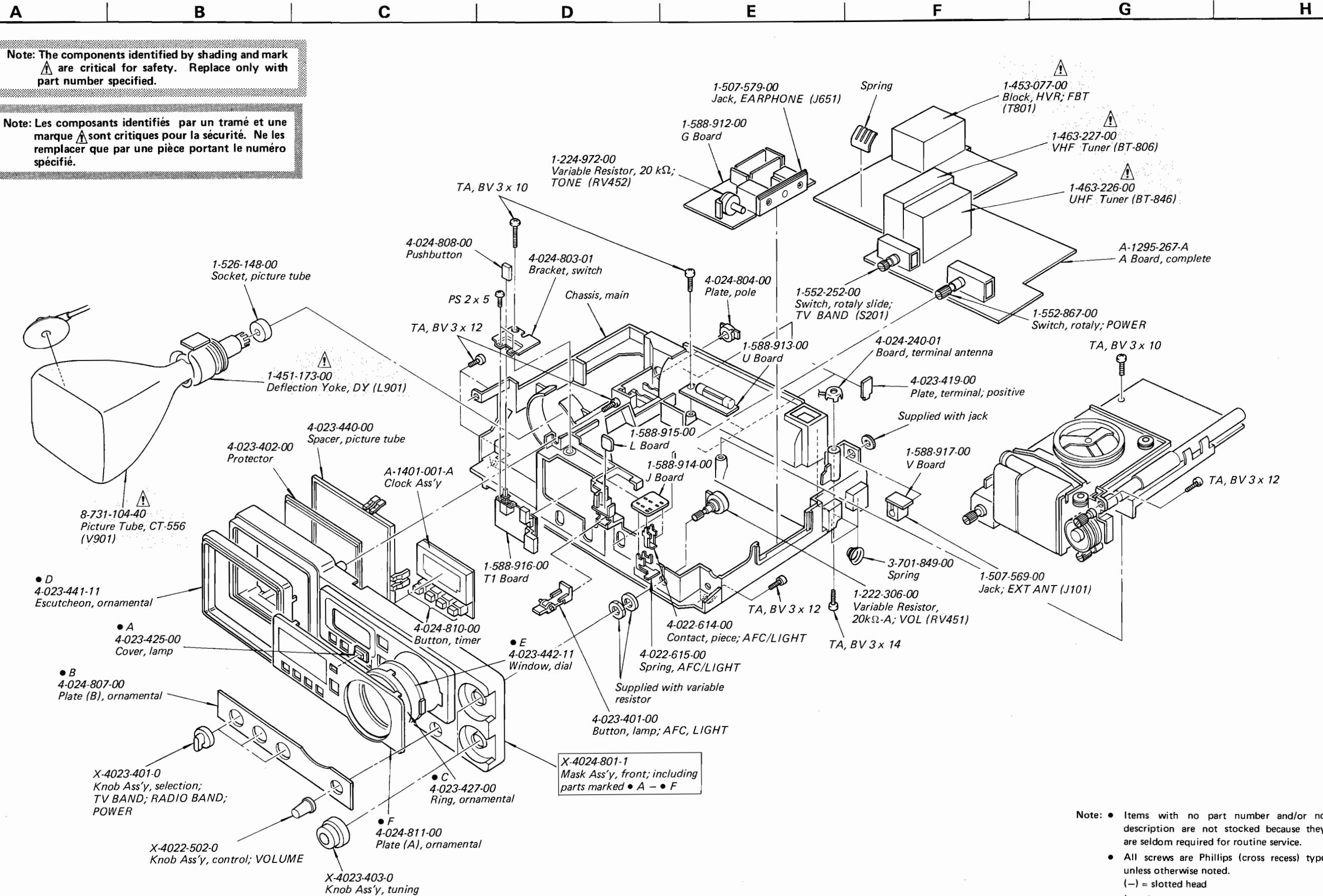
Nut, Washer, Retaining ring:
N 3
Diameter of usable screw or shaft
Reference designation

Reference Designation	Shape	Description	Remarks
SCREWS			
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		braizer-head screw	
SET SCREWS			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
NUT			
N		nut	
WASHERS			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
RETAINING RINGS			
E		retaining ring	
G		grip-type retaining ring	



SECTION 5
EXPLODED VIEWS

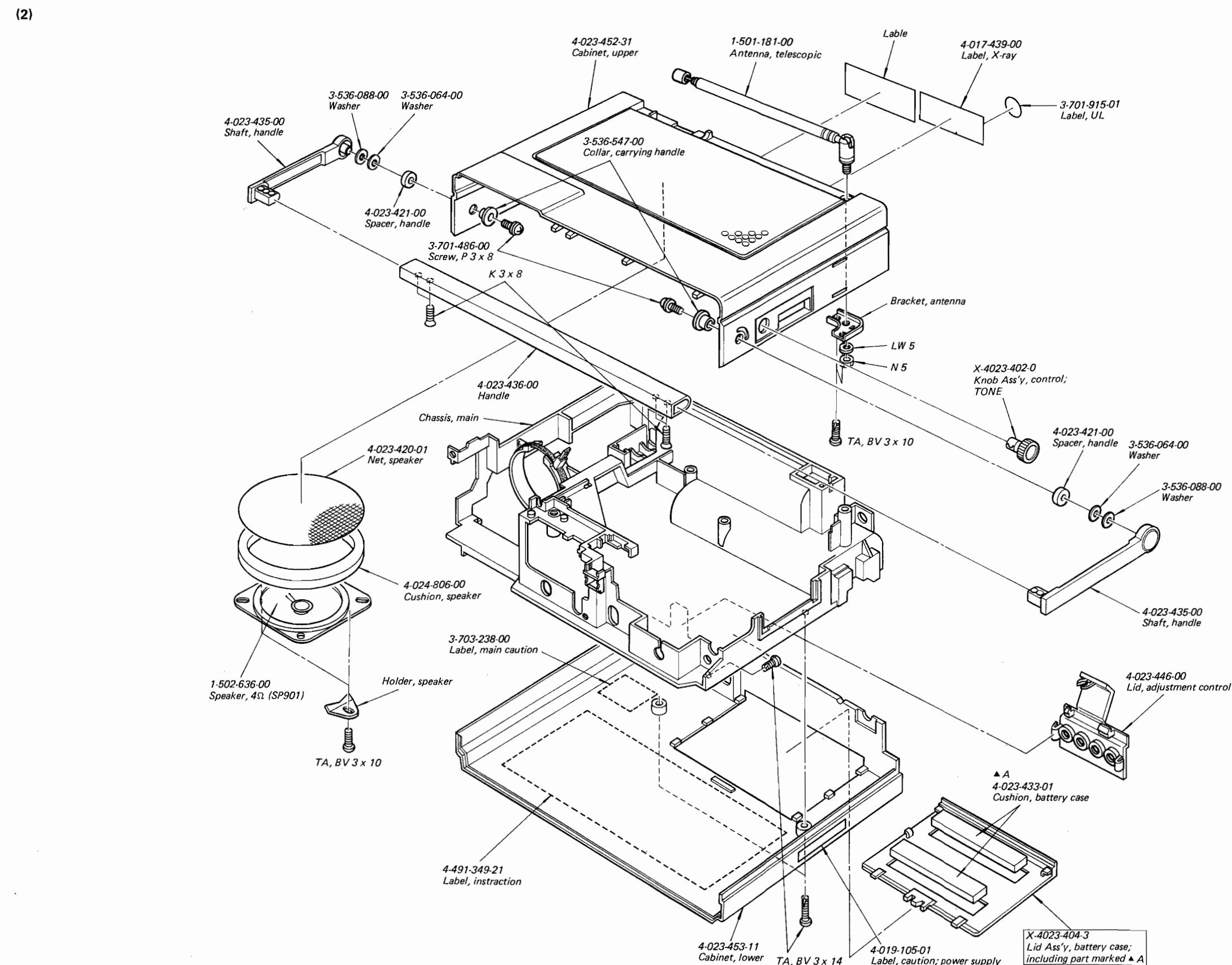
TV-413 TV-413



Note: • Items with no part number and/or no description are not stocked because they are seldom required for routine service.

- All screws are Phillips (cross recess) type unless otherwise noted.
- (-) = slotted head
- (□□T) shows the number of coils in spring.

A B C D E F G H



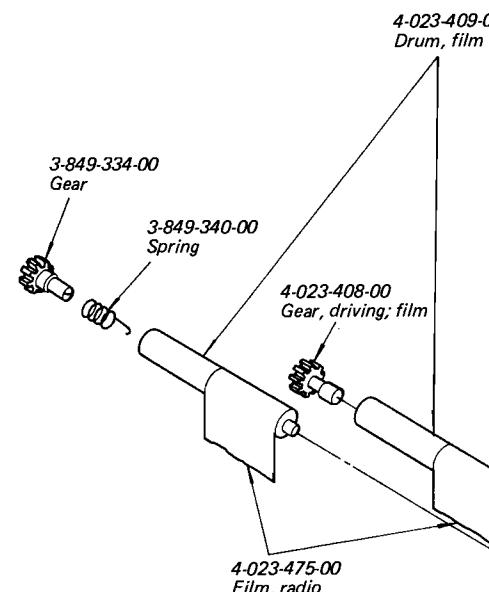
Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
- (—) = slotted head
- (□□T) shows the number of coils in spring.

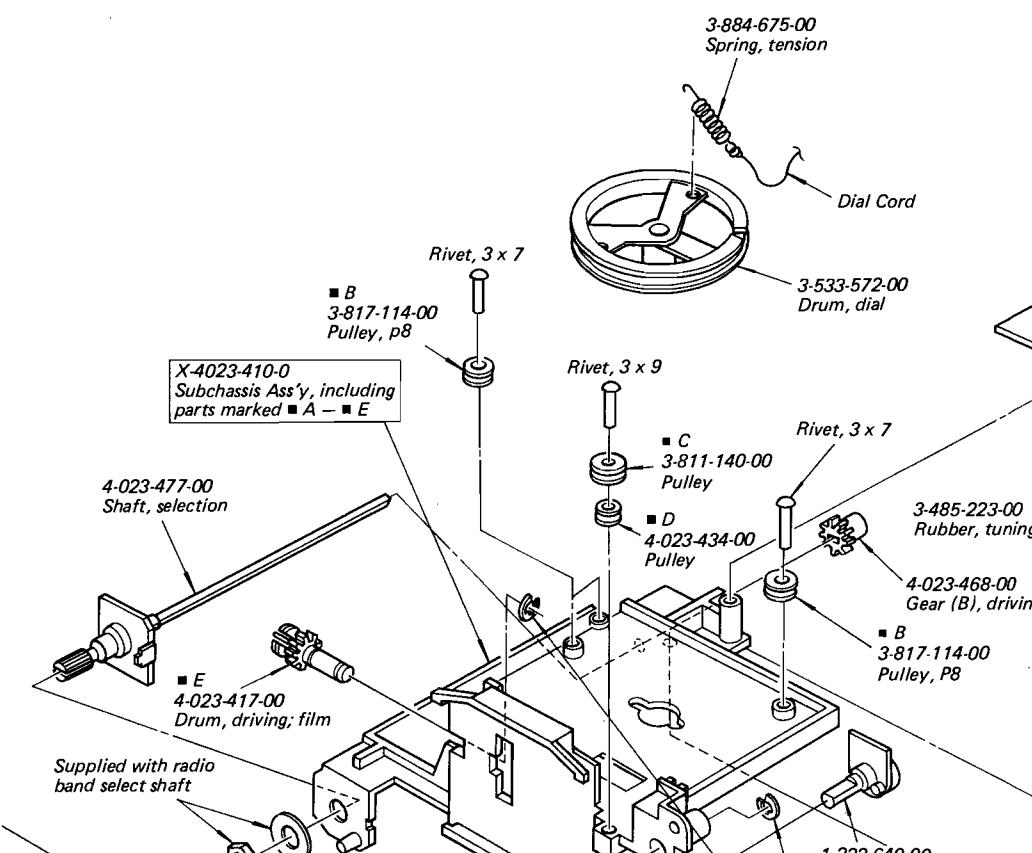
A B C D E F G H

(3)

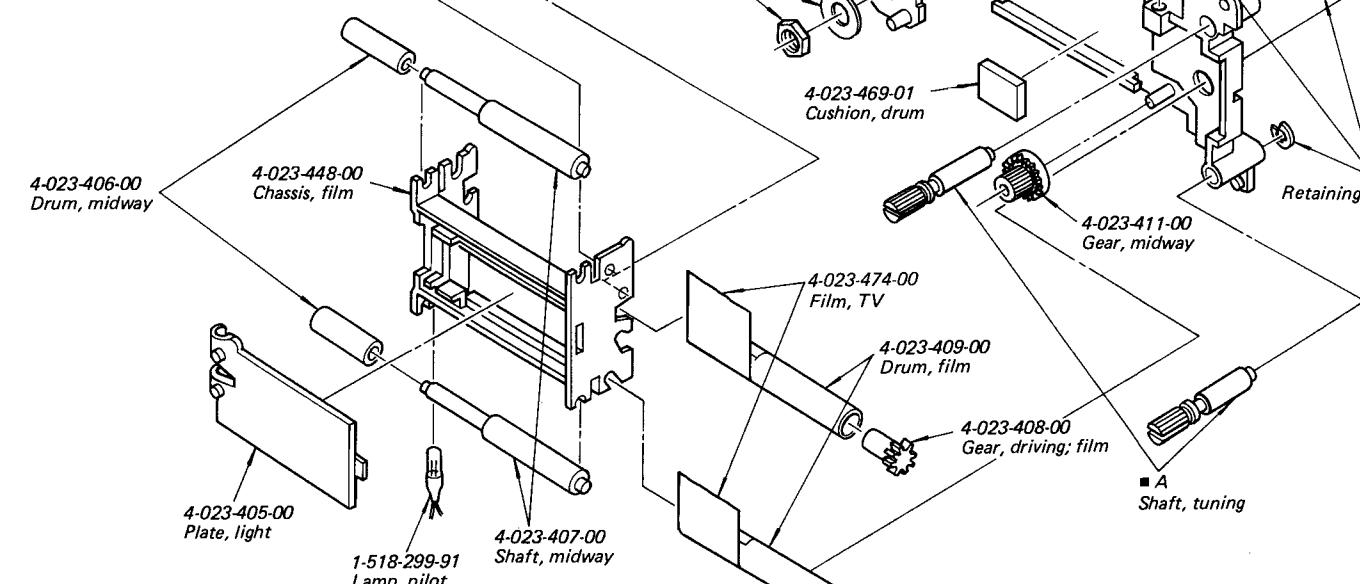
1



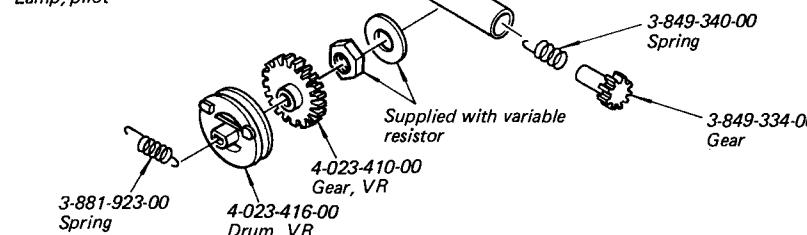
2



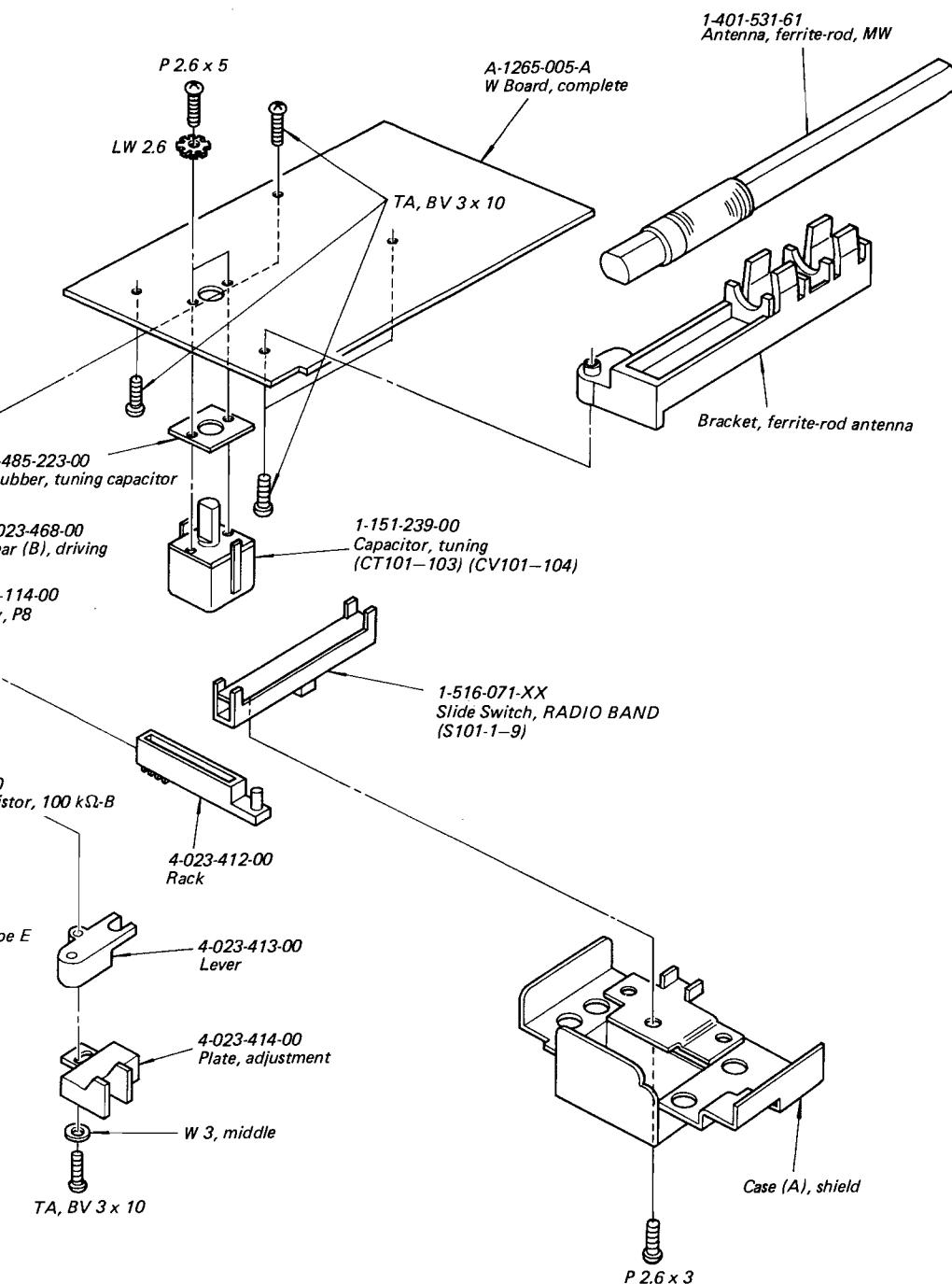
3



4



5



Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
(-) = slotted head
- (□□T) shows the number of coils in spring.

SECTION 6

ELECTRICAL PARTS LIST

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
TUNERS AND CIRCUIT BOARDS					
	▲ 1-463-226-00	UHF Tuner, BT-846	⇒ Q651	8-729-316-12	2SC1061
	▲ 1-463-227-00	VHF Tuner, BT-806	⇒ Q751	8-729-612-77	2SA1027R
	1-588-912-00	G Board	Q752, 753	8-729-663-47	2SC1364
	1-588-913-00	U Board	Q801, 802	8-729-663-47	2SC1364
	1-588-914-00	J Board	Q803	8-760-413-10	2SC1475
	1-588-915-00	L Board	Q851	8-729-663-47	2SC1364
	1-588-916-00	T1 Board			ICs
	1-588-917-00	V Board	IC201	8-759-966-81	SN76681N
	A-1265-005-A	W Board, complete	IC451	8-759-841-12	LA4112
	A-1295-267-A	A Board, complete			
	A-1401-001-A	Clock Ass'y	IC851	8-759-157-40	μPC574J
SEMICONDUCTORS					
Transistors					
Q4	8-729-663-47	2SC1364	D1, 2	8-719-815-55	1S1555
⇒ Q5	8-729-612-77	2SA1027R	D3	8-719-900-93	V09C
Q6	8-760-513-10	2SA772	⇒ D101	8-719-768-72	1S2687S-2
Q101	8-729-803-04	2SC930	D102, 103	8-719-026-11	1T261
⇒ Q102, 103	8-729-663-47	2SC1364	⇒ D104-106	8-719-422-21	1T22AM
Q104	8-729-671-13	2SC710	D201	8-719-815-55	1S1555
Q105	8-729-671-14	2SC710	D451	8-719-815-55	1S1555
Q106	8-729-671-13	2SC710	D551	8-719-122-20	VD1222
Q107	8-729-671-15	2SC710	D552	8-719-815-55	1S1555
Q108, 109	8-729-671-13	2SC710	D601	▲ 8-719-143-07	RD4.3E
Q110	8-729-671-14	2SC710	D602	8-719-143-07	RD4.3E
Q201-205	8-729-671-14	2SC710	D651	▲ 8-719-991-04	EQA01-10S2
Q206-208	8-729-663-47	2SC1364	D652	8-719-143-07	RD4.3E
Q401	8-724-375-01	2SC403C	D653	8-719-815-55	1S1555
⇒ Q501	8-729-612-77	2SA1027R	D751	8-719-301-11	SEL101R
Q551, 552	8-729-663-47	2SC1364	D801-803	8-719-815-55	1S1555
Q553	8-760-335-10	2SC1474	D804	8-719-320-11	HF1A
Q554	8-760-513-10	2SA772	⇒ D851	8-719-320-31	HF1C
Q601	8-763-213-00	2SA861	D852	8-719-320-11	HF1A
Q602	8-729-663-47	2SC1364	D853	8-719-815-55	1S1555

• ⇒: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

Note: The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un trame et une marque ▲ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
MISCELLANEOUS		
⇒ TH201,202 ⇒ TH551	1-800-071-XX	Thermistor, TH-350
TH751	1-800-202-XX	Thermistor, S-10K
COILS		
All coils are microinductors unless otherwise noted.		
L1	1-407-184-XX	3.3 μ H
L101	1-425-632-00	FM RF
L103	1-405-595-00	FM OSC
L104	1-407-169-XX	100 μ H
L105	1-407-182-XX	2.2 μ H
L106	1-407-177-XX	470 μ H
L107	1-407-178-XX	1 μ H
L108	1-401-531-XX	MW Ferrite-rod Antenna
L201	1-420-830-00	CIF
L203	1-407-189-XX	8.2 μ H
L204	1-409-179-00	4.5MHz TRAP
L205	1-407-189-XX	8.2 μ H
L206	1-404-103-00	SIF
L207	1-407-173-XX	220 μ H
L401	1-407-173-XX	220 μ H
L601, 602	1-407-172-XX	180 μ H
L651	1-407-169-XX	100 μ H
L801	1-405-760-00	H. OSC
L901	⚠ 1-451-173-00	Deflection Yoke, DY
TRANSFORMERS AND FILTERS		
CF101, 102	1-527-184-XX	Ceramic Filter 10.7MHz
CF201	1-527-260-00	Ceramic Filter 4.5MHz
CP101	1-231-286-00	Bandpass Filter
T101	1-403-872-00	FM IFT

- ⇒: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

Note: The components identified by shading and mark **⚠** are critical for safety. Replace only with part number specified.

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>		
T102	1-403-952-00	FM Discriminator		
T103	1-403-953-00	FM Discriminator		
T104	1-404-041-00	AM IFT		
T107	1-405-520-00	AM OSC		
T108	1-403-165-00	CFT		
T201	1-404-118-00	VIIFT		
T401	⚠ 1-442-757-00	Heater, HT		
T801	⚠ 1-453-077-00	Flyback, FBT		
CAPACITORS				
All capacitors are in μ F and ceramic unless otherwise noted. 50WV or less are not indicated except for electrolytics.				
p : $\mu\mu$ F, elect : electrolytic				
C3	1-102-116-00	680p		
C101	1-102-937-00	4p		
C102-104	1-101-923-00	0.01		
C105	1-102-959-00	22p		
C106	1-102-074-00	0.001		
C108, 109	1-101-923-00	0.01		
C110	1-102-506-00	7p		
C111	1-101-576-00	1.5p		
C112	1-102-504-00	4p		
C113	1-102-960-00	24p		
C114	1-131-402-00	0.1	16V	tantalum
C115	1-101-923-00	0.01		
C116	1-102-116-00	680p		
C117	1-121-413-00	100	6.3V	elect
C118	1-101-924-00	0.022		
C119	1-101-923-00	0.01		
C120	1-101-924-00	0.022		
C121	1-121-651-00	10	16V	elect
C122	1-101-923-00	0.01		
C123	1-101-576-00	1.5p		
C124	1-101-924-00	0.022		
C125	1-121-651-00	10	16V	elect

Note: Les composants identifiés par un trame et une marque **⚠** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>			<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>		
C126, 127	1-102-978-00	220p			C228, 229	1-101-005-00	0.022		
C128	1-121-413-00	100	6.3V	elect	C230	1-123-316-00	10	16V	elect
C129	1-101-924-00	0.022			C231, 232	1-102-947-00	10p		
C130	1-161-013-00	0.01		(semiconductor)	C233	1-101-002-00	0.0022		
C131	1-101-924-00	0.022			C234	1-101-004-00	0.01		
C132	1-161-021-00	0.047		(semiconductor)	C235	1-123-354-00	3.3	50V	elect
C133	1-102-973-00	100p			C236	1-123-316-00	10	16V	elect
C134	1-161-012-00	0.0082		(semiconductor)	C237	1-101-002-00	0.0022		
C135	1-101-923-00	0.01			C238	1-108-383-00	0.033	100V	mylar
C136	1-102-949-00	12p			C239	1-101-455-00	0.001		
C139	1-107-231-00	360p			C240	1-123-298-00	470	6.3V	elect
C141	1-102-947-00	10p			C241	1-101-005-00	0.022		
C142	1-102-285-00	10p			C242	1-101-004-00	0.01		
C144-147	1-101-923-00	0.01			C243	1-101-006-00	0.047		
C148	1-101-924-00	0.022			C401	1-123-328-00	4.7	25V	elect
C149, 150	1-101-923-00	0.01			C402	1-102-121-00	0.002		
C201	1-102-942-00	5p			C403	1-108-389-00	0.1	100V	mylar
C202, 203	1-101-002-00	0.0022			C451	1-123-316-00	10	16V	elect
C204-206	1-101-455-00	0.001			C452, 453	1-123-306-00	47	10V	elect
C207	1-101-361-00	150p			C454	1-123-308-00	220	10V	elect
C208	1-101-002-00	0.0022			C455	1-123-307-00	100	10V	elect
C209	1-102-971-00	82p			C456	1-123-299-00	1000	6.3V	elect
C210	1-102-976-00	180p			C457	1-123-352-00	1	50V	elect
C211, 212	1-102-947-00	10p			C458	1-102-110-00	220p		
C213	1-102-820-00	330p			C459	1-101-455-00	0.001		
C214	1-102-942-21	5p			C460	1-123-317-00	22	16V	elect
C215	1-108-379-00	0.015	100V	mylar	C461	1-123-316-00	10	16V	elect
C216	1-123-351-00	0.47	50V	elect	C462	1-108-624-00	0.0068	100V	mylar
C217	1-101-002-00	0.0022			C463	1-123-316-00	10	16V	elect
C218	1-123-296-00	220	6.3V	elect	C464	1-123-295-00	100	6.3V	elect
C219	1-101-004-00	0.01			C501	1-108-383-00	0.033	100V	mylar
C220	1-123-317-00	22	16V	elect	C502	1-123-352-00	1	50V	elect
C221	1-101-455-00	0.001			C551, 552	1-108-387-00	0.068	100V	mylar
C222	1-123-316-00	10	16V	elect	C553	1-108-379-00	0.015	100V	mylar
C223	1-101-003-00	0.0047			C554	1-108-383-00	0.033	100V	mylar
C224, 225	1-123-316-00	10	16V	elect	C555	1-108-385-00	0.047	100V	mylar
C226	1-101-002-00	0.0022			C556	1-131-199-00	10	16V	tantalum
C227	1-102-971-00	82p							

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>		
C557, 558	1-123-305-00	33	10V	elect
C559	1-123-328-00	4.7	25V	elect
C560	1-123-299-00	1000	6.3V	elect
C561	1-123-298-00	470	6.3V	elect
C562	1-108-387-00	0.068	100V	mylar
C601	1-102-116-00	680p		
C651	1-102-978-00	220p		
C652	1-119-165-00	1000	25V	elect
C653	1-123-320-00	100	16V	elect
C751	1-123-352-00	1	50V	elect
C752	1-123-295-00	100	6.3V	elect
C801, 802	1-108-624-00	0.0068	100V	mylar
C803	1-123-352-00	1	50V	elect
C804	1-108-379-00	0.015	100V	mylar
C805	1-123-352-00	1	50V	elect
C806	1-108-389-00	0.1	100V	mylar
C807	1-123-354-00	3.3	50V	elect
C808	1-108-367-00	0.0015	100V	mylar
C809	1-108-383-00	0.033	100V	mylar
C810	1-108-389-00	0.1	100V	mylar
C811	1-123-306-00	47	10V	elect
C812	1-102-110-00	220p		
C813	1-123-352-00	1	50V	elect
C814	1-123-308-00	220	10V	elect
C815	▲ 1-108-377-00	0.01	100V	mylar
* C816	1-108-369-00	0.0022	100V	mylar
	1-108-620-00	0.0033	100V	mylar
	1-108-373-00	0.0047	100V	mylar
	1-108-624-00	0.0068	100V	mylar
	1-108-625-00	0.0082	100V	mylar
C851	1-129-736-00	0.033	630V	Polyethylene
C852	1-123-356-00	10	50V	elect
C901	1-101-455-00	0.001		
C902	1-102-973-00	100p		
C903	1-102-129-00	0.01		
CT101-103	1-151-239-00		Trimmer	
CT105	1-141-138-XX		Trimmer	

* Selected to yield optimum performance.

Note: The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>		
CV101-104	1-151-239-00		Trimmer	
RESISTORS				
		All resistors are in ohms. Common $\frac{1}{4}$ W carbon resistors are omitted. Refer to the list on page 24 for their part numbers.		
All variable and adjustable resistors have characteristic curve B, unless otherwise noted. $k\Omega$: 1000Ω , $M\Omega$: $1000k\Omega$				
R4	1-202-719-00	1M	$\frac{1}{2}$ W	composition
R6	1-202-719-00	1M	$\frac{1}{2}$ W	composition
R237	1-212-376-00	22	1W	metal oxide (nonflammable)
R566	1-212-371-00	8.2	1W	metal oxide (nonflammable)
R601	▲ 1-246-511-00	39k	$\frac{1}{4}$ W	Carbon
R602	▲ 1-246-455-00	180	$\frac{1}{4}$ W	carbon
R603	▲ 1-246-483-00	2.7k	$\frac{1}{4}$ W	carbon
R604	▲ 1-246-481-00	1.8k	$\frac{1}{4}$ W	carbon
R605	1-213-124-00	27	1W	metal oxide (nonflammable)
R651	▲ 1-213-134-00	180	1W	metal oxide (nonflammable)
R652	1-213-133-00	150	1W	metal oxide (nonflammable)
R653	1-213-129-00	68	1W	metal oxide (nonflammable)
R654	1-213-133-00	150	1W	metal oxide (nonflammable)
R814	1-213-127-00	47	1W	metal oxide (nonflammable)
R860	1-202-735-00	22M	$\frac{1}{2}$ W	composition
RV401	1-224-897-00	1k, variable; CONTR		
RV402	1-224-899-00	250k, variable; BRT		
RV451	1-224-694-XX	20k-A, variable; VOL		
RV452	1-224-972-00	20k, variable; TONE		
RV551	1-224-898-00	100k, variable; V. HOLD		
RV552	1-224-645-XX	10k, adjustable; V. SIZE		
RV601	▲ 1-224-642-XX	1k, adjustable; +6V ADJ		

Note: Les composants identifiés par un trame et une marque ▲ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
RV801	1-224-897-00	1k, adjustable; H. HOLD
RV851	1-224-645-XX	10k, adjustable; +25V ADJ
RV852	1-224-647-XX	47k, adjustable; TUNING ADJ
RV951	1-222-640-00	100k, variable; TV TUNE
MISCELLANEOUS		
F651,652	1-532-402-XX	Fuse, 1.25A
J101	1-507-569-00	Jack, EXT ANT
J651	1-507-579-00	Jack, EARPHONE
LC201	1-417-060-00	Separator, UV
PL901	1-518-299-91	Lamp, pilot
S5	1-552-854-00	Switch, push; BUZZER
S101	1-516-071-XX	Switch, slide; RADIO BAND
S201	1-552-252-00	Switch, rotary slide; TV BAND
S451	{ 4-022-614-00 4-022-615-00	Piece, contact) AFC/LIGHT Spring, contact
S601	1-552-867-00	Switch, rotary; POWER
SP901	1-502-636-00	Speaker, 4Ω
V901	8-731-104-40	Picture Tube, CT-556
	1-401-531-60	Antenna, ferrite-rod; MW
	1-501-181-00	Antenna, telescopic
	1-526-148-00	Socket, picture tube
	1-543-060-00	Core

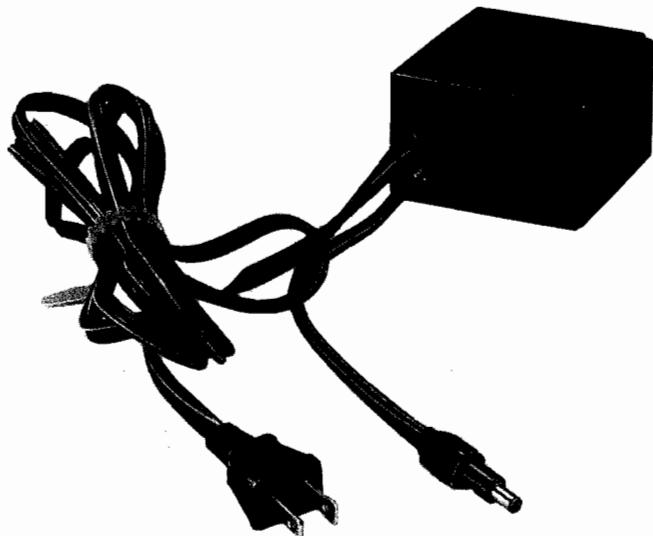
ACCESSORIES AND PACKING MATERIALS	
<u>Part No.</u>	<u>Description</u>
1-504-059-11	Magnetic Earphone, ME-20H
1-528-027-11	Battery, size "AA" (IEC Designation R6)
3-701-625-00	Bag, polyethylene
3-701-730-00	Envelope, IBM card
3-794-233-21	Instruction
4-023-444-00	Hood
4-023-459-00	Bag, protection
4-023-462-00	Cushion, right
4-023-463-00	Cushion, left
4-023-483-00	Cushion
4-024-805-00	Contact, battery
4-491-213-21	Instruction
4-495-819-21	Manual, instruction (US model)
4-495-819-31	Manual, instruction (Canadian model)
A-1000-458-A	AC Adaptor, AC-121W (US model)
A-1000-468-A	AC Adaptor, AC-121W (Canadian model)

Note: The components identified by shading and mark  are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

TV-413

AC-121W



AC ADAPTOR

SPECIFICATIONS

Power Requirements: 120 V, 60 Hz

Power Consumption: 14.5 W ac with FX-412 operated.

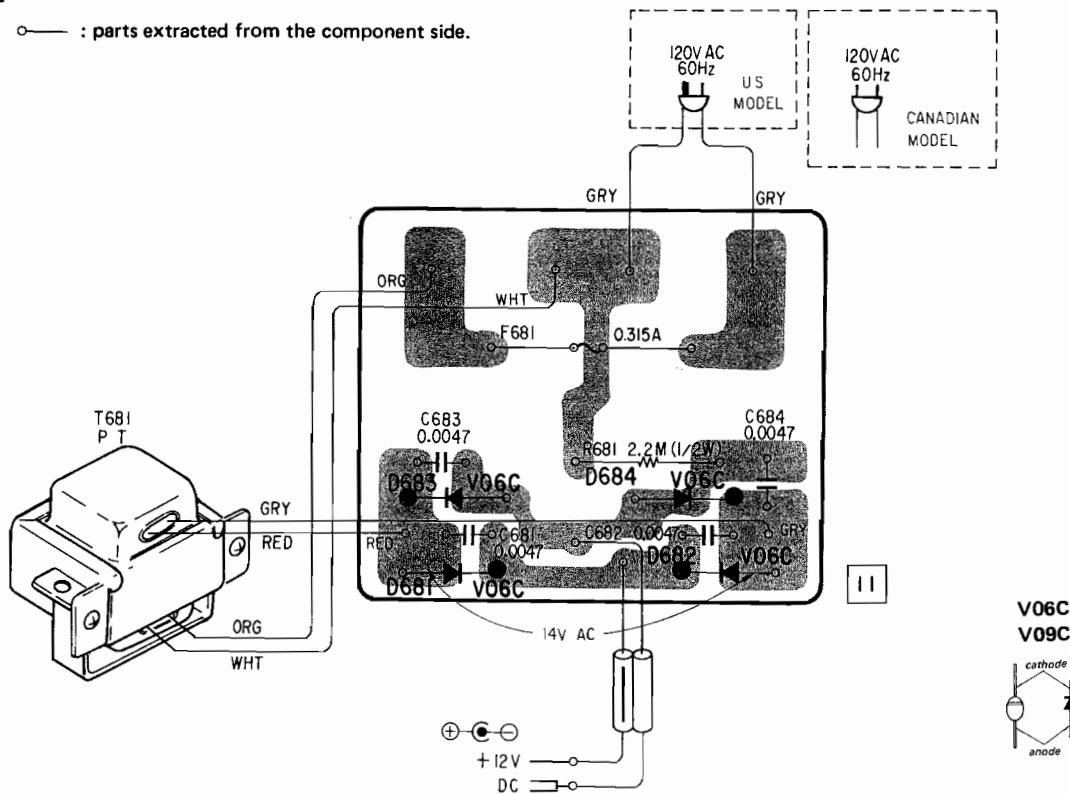
Dimensions: Approx. 78 (w) x 53 (h) x 80 (d) mm
3 1/8 (w) x 2 1/8 (h) x 3 1/8 (d) inches
excluding power cord and dc cord.

Net Weight: Approx. 640 g, 23 oz (US model)
600 g, 21 oz (Canadian model)
including power cord and dc cord.

1. MOUNTING DIAGRAM

- Conductor Side
- F Board

Note: • — : parts extracted from the component side.



2. SCHEMATIC DIAGRAM

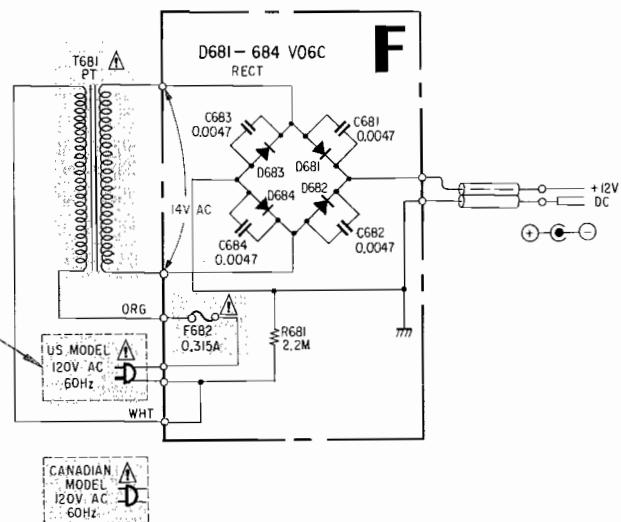
- F Board

Note:

- All capacitors are in μF unless otherwise noted. μF : μF 50WV or less are not indicated except for electrolytics.
- All resistors are in ohms, $\frac{1}{4}\text{W}$ unless otherwise noted. $\text{k}\Omega$: 1000Ω ; $\text{M}\Omega$: $1000\text{k}\Omega$

CAUTION

This set is equipped with a polarized AC power cord plug (one blade of the plug is wider than the other). When replacing the AC power cord, be sure to connect it with specified part number as shown in this diagram.



Note: The components identified by shading and mark are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un trame et une marque sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

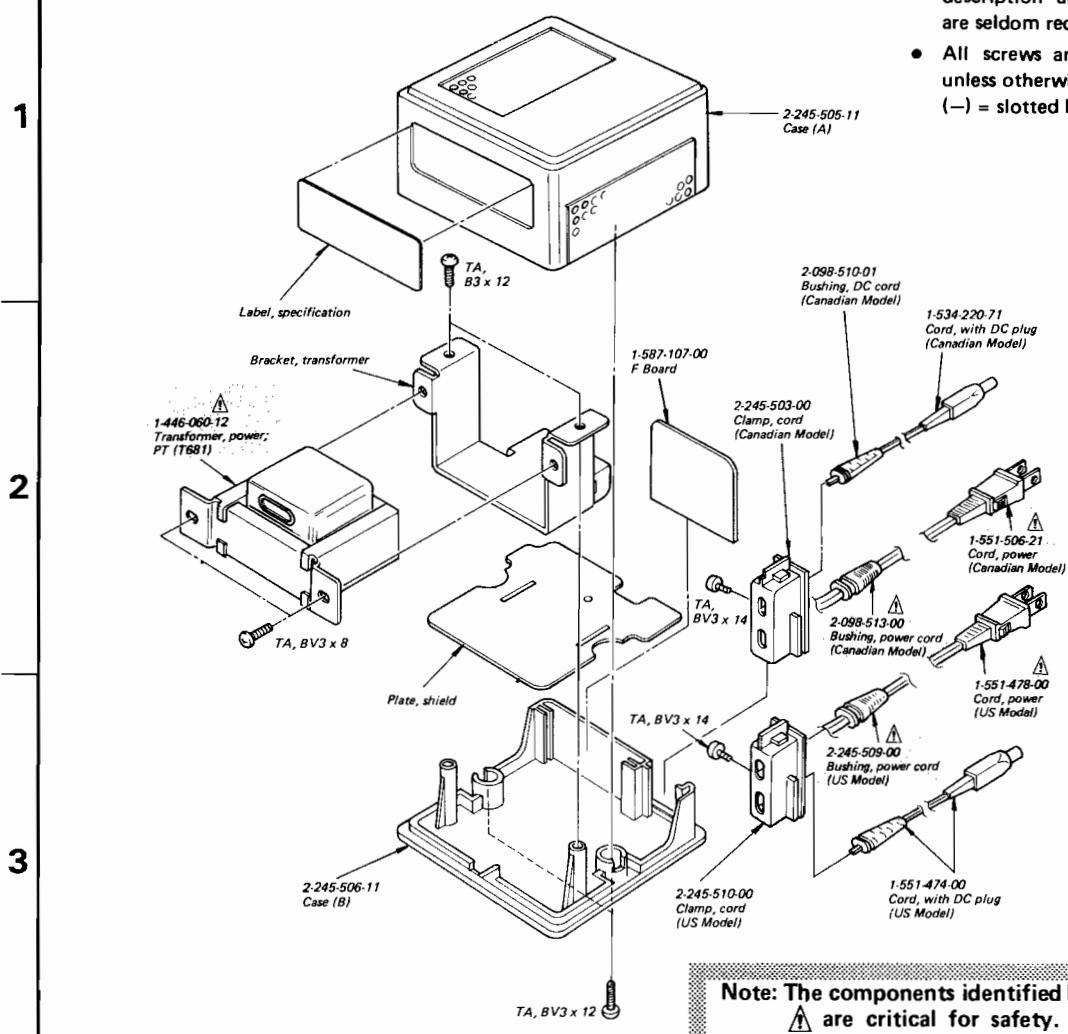
A

B

C

D

3. EXPLODED VIEW



Note: The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un trame et une marque ▲ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

4. ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
C681-684	1-101-003-00	Capacitor, ceramic; 0.0047μF
⇒ D681-684	8-719-900-93	Diode, V09C
F681	▲1-532-400-XX	Fuse, 0.315A
R681	1-202-723-00	Resistor, composition; 2.2MΩ 1/2W
T681	▲1-446-060-12	Transformer, power; PT
	1-534-220-71	Cord with DC plug (Canadian model)
▲1-551-506-21		Cord, power
1-551-474-00		Cord with DC plug (US model)
▲1-551-478-00		Cord, power
1-587-107-00		F Board

• ⇒: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

TV-413
AC-121W

9-962-502-01

Sony Corporation

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Printed in Japan

Date: January 21, 1982 No: 8304

TV PRODUCTS

Model: TV-413

Subject: Part Number Correction

Please make the following corrections in your service manual page 26.

